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ABSTRACT

This study used an iterative Delphi survey process of about 600 faculty, employers, and policymakers to identify writing, speech and listening, and critical thinking skills that college graduates should achieve to become effective employees and citizens (National Education Goal 6). Participants reached a consensus about the importance in critical thinking of the ability to detect: indirect persuasion including the use of leading questions that are biased towards eliciting a preferred response, use of misleading language, use of slanted definitions or comparisons, and instances where irrelevant topics or considerations are brought into an argument to divert attention from the original issue. With regard to effective writing respondents thought that graduates should be able to use active or passive voice where appropriate, use correct grammar, use specific language conventions of their academic discipline, and use language that their audience understands. With regard to speech communication skills respondents reached agreement about the importance of information exchange, conversation management, group communication, and using and understanding spoken English and non-verbal signs. Extensive tables detail the Delphi survey results. (Contains 168 references.) (JB)

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NATIONAL CENTER FOR EDUCATION STATISTICS

National Assessment of College Student Learning: Identifying College Graduates' Essential Skills in Writing, Speech and Listening, and Critical Thinking

Final Project Report

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May 1995

The perspectives and conclusions are those of the author and do not represent the views or policy of the U.S. Department of Education.

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FOREWORD

National Education Goal 6 (originally listed as Goal 5) calls for the enhancement of college graduates' ability to think critically, communicate effectively, and solve problems. This working paper was commissioned by the National Center for Educational Statistics (NCES). It is the fifth report outlining NCES planning activities to develop a process for the assessment of college student learning. The purpose of this study was first to identify, and then try to reach a consensus, among a group of faculty, employers, and policymakers, on the specific higher order communication and thinking skills that college graduates should achieve to become effective employees in the workplace and citizens in society. Although the 600 "judges" consulted were not necessarily representative of the universe of faculty, employers, and policymakers, the working paper does expand the number of individuals involved in making these expert judgments. In addition to reporting on the results of a two stage iterative Delphi survey process, the report highlights participants comments that provide insight why some agreed or disagreed about the importance of specific skills. It is to be noted that the working paper was not intended to provide a prescribed set of communication and critical thinking skills, but rather to stimulate discussion on the teaching/learning of these skills among educators. The ultimate choice as to which of these skills should be taught and mastered by college graduates will rest with each institution and its faculty. A future publication will provide similar information on problem solving skills with a working paper devoted to the reading skills expected of college graduates to follow.

This work was conducted by the National Center on Postsecondary Teaching, Learning, and Assessment of the Pennsylvania State University, James Ratcliff, Director. It was funded under Department of Education Contract No. R117G10037. The project team was directed by Elizabeth A. Jones. She was assisted by Steven Hoffman, Lynn Melander Moore, Gary Ratcliff, Stacy Tibbetts, and Benjamin A. L. Click, III. For more information on the project, and earlier publications, contact Sal Corrallo, NCES Project Planning Director, 555 New Jersey Avenue NW, Washington, D.C. 20208, (202) 219-1913 (Voice) or (202) 219-1801 (FAX).[1]

Emerson J. Elliott
Commissioner of Education Statistics

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[1] Copies of earlier reports are available from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Fax number (202) 512-2250. These include:

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National Assessment of College Student Learning: Getting Started, A Summary of Beginning Activities, (IBSN) 0-16-041769-4) NCES/OERI/U.S. Department of Education. NCES 93-116, Washington, D.C.

National Assessment of College Student Learning: Identification of the skills to be Taught, Learned, and Assessed, A Report on the Second Study Design Workshop, November 1992. (IBSN) 0-16-045146-9) NCES/OERI/U.S. Department of Education. NCES 94-286, Washington, D.C.

A Preliminary Study of the Feasibility and Utility for National Policy of Instructional "Good Practice" Indicators in Undergraduate Education, (IBSN) 0-16-045151-5) NCES/OERI/U.S. Department of Education. NCES 94-437, Washington, D.C.

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I. BACKGROUND AND PURPOSE

In Winter 1990, the President of the United States and state governors announced six educational goals for the nation that are to be achieved by the year 2000. Goal Five states "every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship." Specifically, Objective Five of Goal Five recommends that "the proportion of college graduates who demonstrate an advanced ability to think critically, communicate effectively, and solve problems will increase substantially." What constitutes advanced abilities in these areas, and how do we know if students have mastered these skills? The National Center for Education Statistics (NCES) has been seeking an effective means for monitoring progress and measuring these advanced intellectual skills toward the attainment of this goal.

Such an assessment must have validity among the colleges and universities where the students are assessed in order for improvement to occur. Criteria and measures of writing, speech and listening, and critical thinking skills need to have validity with national experts in those three areas as well as faculty teaching those skills at the wide variety of institutions where students may choose to complete their degree programs.

Employers, policymakers, parents, and the public have been concerned with the achievements of college graduates. Employers are troubled by deficiencies in skills among new workers. The inability of large numbers of new employees to meet the reading, writing, or computational standards required by many segments of American business is an economic and competitive issue for United States companies challenged by foreign enterprises (Carnevale, Gainer, and Melzer, 1990). As a result, more corporations are trying to influence the United States educational system and thus improve the skills of future workers (Coates, Jarratt, and Mahaffie, 1990). Also, policymakers and legislators, who shape the institutional environments and their policies, believe that students need certain skills in order to be effective citizens.

The need for college graduates to communicate effectively is very important in our society where the daily operations and success of business organizations are contingent upon managing, making decisions, documenting, and reporting large amounts of complex information. In nearly every study that has investigated the qualities employers most desire in their employees, "good communication skills, both verbal and written, rank high among the top priorities of those in business and industry" (Barabas, 1990, p. 9). For example, business executives, when asked about which college courses they considered as the best foundation for business leadership, rated oral and written business communication as very important more often than any of the other courses (Hildebrandt, Bond, Miller, & Swinyard, 1982). Employers of civil and electrical engineering graduates rated speaking and writing as the most important areas of competence and these same areas were identified as the most deficient in these graduates (Kimel & Monsees, 1979). Human resource consultants in businesses indicated a clear consensus that companies with less hierarchies are requiring employers to be more autonomous (Cappelli, 1992). Leadership and communication skills are increasingly more important as managers are expected to supervise more people and in more informal reporting

arrangements. Communication skills in working teams become important as well as the ability to be flexible and open to changes necessitated by expanding fields of knowledge. Additional research has found that employees who write well have better prospects for advancement within business organizations (Anderson, 1985; Belohlov, Popp, & Porte, 1974; Cox, 1976; Stine & Skarzenski, 1979; Storms, 1983; and Van Dyck, 1980). While research has documented the importance of these skills for our future leaders in business and society, the specific nature and levels of attainment in these areas are unclear.

In order to define these skills, the appropriate stakeholders (faculty, employers, and policymakers) in higher education need to be consulted to determine what specific skills are most important for college graduates to achieve. In short, to answer how we are doing as a nation in attaining Goal 5.5, we first need to define what particular skills and competencies are critical for students to obtain upon completion of their associate or baccalaureate degrees.

In the fall of 1991 and 1992, NCES sponsored study design workshops to identify the major issues and concerns related to an assessment of communication and critical thinking skills. For both workshops, national experts in assessment and college student learning including practitioners, researchers, faculty, employers, and policymakers, were commissioned to write position papers. In these documents, the authors identified the skills and levels of achievements that are important for college graduates, and they described a framework of methods for assessing these skills. These papers were distributed to reviewers and additional participants to obtain their feedback and evaluations in small working group sessions.

These participants expressed many different views regarding the definitions and assessments of college student learning in the communication and critical thinking areas. There was no clear consensus about these skills. Workshop proceedings were produced by NCES (1994) as well as other documents that summarize the activities to date about a national assessment of college student learning.

An initial step in designing an appropriate national assessment of collegiate skills is a consensus-building process. Critical thinking, problem-solving, and communication skills are usually broadly understood. However, the specific skills that college graduates need in these areas are not clear. For example, Ennis (1987, p. 10) noted that critical thinking is "too vague to provide the schools and colleges with specific guidance." The specific, important elements of critical thinking are often debated by philosophers, psychologists, and other educators. Very little research or formal studies have sought to include employers and policymakers in the same dialogue with faculty in explorations to define these important skills.

In a series of four recent public hearings, some individuals emphasized that in order for this effort to be effective, all constituencies must be involved in a consensus-building process to determine what skills college graduates need to set appropriate standards and definitions for achievement levels, and to review and evaluate approaches (Jones, 1993). Faculty and administrators representing the variety of institutions in different geographic locations as well

as employers, policymakers, institutional researchers, assessment experts, and higher education coordinating boards need to be included in this dialogue.

The purpose of the study presented in this report was to determine if a consensus could be reached among faculty, employers, and policymakers about the important writing, speech and listening, and critical thinking skills that college graduates should achieve to become effective employees in the workplace and citizens in society. Reading and problem solving are two important abilities encompassed in Objective 5 of Goal 5. However, due to the limited scope of this current study, these two areas were not formally reviewed.

We viewed writing, speech and listening, and critical thinking as generic skills that cut across a wide range of disciplines in higher education as well as a wide range of work tasks within business organizations. By contrast, domain-specific skills and knowledge refer to those learned through academic courses that are often considered essential for work in a particular field. Domain-related content standards emphasize the knowledge and skills a student is expected to learn which characterizes a specific discipline. Domain knowledge of specific disciplines is important, but it is not the focus of this study. While domain knowledge is often regarded as the beginning point for successful performance in the work environment, it is the generic skills that count towards successful job performance over time (College Placement Council, 1994, p.27). Recent research on job performance consistently indicates the "inadequacy of attempts to itemize skills specific to an occupation; rather it has underscored the role of generic skills in rapidly changing job settings" (College Placement Council, 1994).

In our study, over 600 participants volunteered their time and expertise to make judgements and evaluations about the relative importance of extensive lists of specific skills. These individuals do not necessarily represent the universe of faculty, employers, or policymakers. However, a goal of this study was to expand upon the number of individuals involved in making these expert judgments. These individuals did possess the expertise to review these skills to determine their applicability and importance within the context of their own work or institutional environment. Through an iterative Delphi survey process (described more fully in Section III), these participants had the opportunity to agree or disagree with the importance of a variety of skills ranging from basics to advanced levels. They also received feedback about the overall average response from the initial survey and could revise their ratings as well as provide written statements about why they disagreed with certain average ratings of the entire group of respondents. This empirical feedback gave the participants more information to evaluate their previous decisions.

We identified areas of agreement as well as disagreement between the three groups of participants. Throughout this report, we have illustrated certain points with the actual participants' comments that may provide some insight concerning why they disagree about the importance of specific skills. We hope that these quoted comments expand upon the quantitative findings to suggest reasons for differing opinions or perceptions. Our goal is to provide an array of communication and critical thinking skills that can be reviewed and

considered by faculty, employers, and policymakers. From these extensive lists of skills, individuals can adapt, modify, and decide which goals are most appropriate for their own college students. Through expanded and increased interactions among the relevant stakeholders of higher education, we can all work together to better prepare our college students to achieve the necessary skills for both the workplace and society.

II. DEFINING THE IMPORTANT OUTCOMES

There are many frameworks and research studies that articulate the potential array of writing, speech, and critical thinking skills that college graduates need to become effective communicators in society and stronger leaders or decision makers in business and industry. Many books and volumes of articles have been written by faculty members and other respected researchers. We reviewed the relevant literature in each skill area, including the commissioned papers and reviewers' comments from the recent NCES-sponsored workshops.

Critical thinking is intricately linked with the ability to communicate effectively. However, in the areas of writing, speech, and listening, there are certain fundamental skills that college students need. These basic skills help college students to develop the technical abilities to receive and convey information. As college students develop their advanced abilities to analyze and evaluate, make judgements, and draw appropriate conclusions, then the overlap between critical thinking and the communication skills increase. Effective decision makers, managers, and communicators need to develop strong critical thinking skills. The interconnections among these skills are further described in Section IV.

The majority of the formal research studies concerning these skills are written by professors who study undergraduate students within the context of the college classroom. There are very few formal research studies that focus on the development of these skills within the context of the workplace. There are even fewer formal studies that investigate the communication and critical thinking skills that college graduates need to be effective citizens in society, especially upon the completion of their undergraduate degrees.

In this section, we highlight the major frameworks and studies that help to define the essential skills that college students need. Many of the resources cited in this report provide a more thorough and greater detailed conceptualization and description of the various frameworks.

A. Writing Abilities Framework

There are three generations of research on composing (Faigley et al., 1985). Each generation consists of certain trends in research methods and refinements in how composing is conceptualized. Writing experts propose various theoretical models, and many test their ideas by conducting formal research studies with college students. In our literature review, we examined sources that cut across these three generations. In this section, we provide examples and highlight the major theoretical models associated with each generation. This brief summary of the literature is intended to provide a context for the development of the survey instrument. Elements from these models provided key components for major categories used in the survey as well as the specific writing items included under each segment of the instrument. However, Faigley et al. (1985) provides a more thorough in-depth discussion about these various models.

The first generation of writing research studies posited that writing was a linear process with three main stages: pre-writing, writing, and re-writing. Many of the formal studies as outlined by Braddock, Lloyd-Jones, and Schoer (1963) aimed to test certain instructional strategies believed to improve the overall writing quality of students. Many of these studies compared two groups of students by using a pre-test and post-test research design. The goal was to determine if the group of experimental students taught by particular innovative or special techniques achieved better writing skills than the control group which did not experience these special methods. The academic performance of these two groups were compared in terms of the actual improvements from the time of the pre-test assignment to the post-test activity. The results usually indicated that the students in the experimental group wrote a higher quality post-test essay.

The main model to emerge from this group of studies was delineated by the work of Rohman and Wlecke (1964). They conceived of writing as an analogy of an "archetype of the plant" (11). Writing was a process of development and a series of events that could be plotted on a line. It could be explored by examining the static yet structured, entire writing activity. The whole process could be analyzed point by point. They divided this line into two major segments: a portion of the process consisted of writing which occurs before words are written on paper, and the other part was what occurred after words are written. The former they labeled "pre-writing," and the latter "writing" and "re-writing." Rohman and Wlecke conducted research in the pre-writing phase since they believed that this stage was the most crucial part of the writing process and had not received much attention in previous research studies. They envisioned the pre-writing stage as a discovery period where students "assimilate" their subject to themselves.

The college students in the "experimental group" of the Rohman and Wlecke study were asked to do three special things in their writing courses: maintain a journal describing their thoughts about what they did, practice some meditation principles, and employ analogies for the subjects of their essays. The control group did none of these tasks. The final results of their study indicated that many students in the experimental group enjoyed the course experience. They thought highly of the journal writing since it helped them to better understand themselves and to work towards "self-realization." Students also liked the use of a concrete analogy as a method to organize their perspectives about certain subjects. Rohman and Wlecke concluded that students in the experimental group wrote better essays at the end of the instruction than the control group did.

Other research studies built upon the work completed by Rohman and Wlecke. For example, Odell (1974) investigated the pre-writing stage and used certain procedures or sets of operations to aid college students with the pre-writing processes of exploring their own experiences and in the generation of ideas. Within this first generation of studies, some researchers viewed writing as an expressive process where ideally students discover meaning while writing. According to Faigley (1986), the criteria of good writing from the expressive viewpoint were integrity, spontaneity, and originality.

The second generation of studies focused more directly on the writer's strategies for composing and emphasized that planning occurs throughout the composing process. These studies demonstrated that the stages of writing are not clear cut and sequential (e.g., Emig, 1964; 1971). There was a shift away from comparisons of teaching methods to the strategies that writers use in composing (Faigley et al., 1985). Emig (1971) watched a small number of students as they wrote and asked them to speak about their ideas as they were writing. This research technique is known as "thinking-aloud protocols." Based upon the outcomes of these students' verbal expressions, Emig described the composing process as including considerations of writing contexts and identifying the nature of stimuli, prewriting, planning, starting, composing texts, reformulating, stopping, reflecting, and teacher influence (Emig, 1971).

Much of the research in this generation also emphasized the revision process that students engage in to improve their writing. As Sommers (1980) noted, one of the main differences between speech and writing is that the possibility of revision exists for the written text. The linear models from the first generation tended to overlook the revision process. A linear model with discrete phases would view revision as an "afterthought." Revision could be simply the repetition of writing. Sommers sought to examine the writing process by comparing the revision strategies of experienced adult writers such as editors, journalists, and academics with the techniques of revision used by freshmen student writers. Each person in the study wrote three essays and rewrote each essay twice. Each writer was interviewed three times after the final revision of each essay.

The final results indicated differences between the revision process of the student writers versus the experienced writers. The students viewed the revision process as a "rewording activity" because they believed that words were the important unit of writing. They concentrated on specific words divorced from their role in the text. Sommers noted the students are "governed, like the linear model itself . . . that prohibits logically needless repetition: redundancy and superfluity" (381). Students were most concerned about repetition. Students did not see a need to revise if they believed they knew what they wanted to say from the very beginning. These students lacked "the procedures or heuristics to help them reorder lines of reasoning or ask questions about their purposes and readers" (383).

The experienced writers in Sommers' study viewed their main goal in revising a written piece as discovering the "form or shape of their argument." Their first drafts were often attempts to define their ideas, and in the second draft, they would begin to develop more patterns of what to add or delete based upon their argument. The experienced writers also had more concern for their audience or readers. They would often use their reader's expectations to serve as a critic of their work. These expectations would shape how experienced writers would make subsequent revisions. Experienced writers viewed revision as a process of "discovering meaning altogether."

A major model of the writing process to emerge from this second generation was developed from a series of research studies conducted by Flower and Hayes (1980a, 1980b, 1981). They studied the composing process and provide a theoretical foundation to explain the major

activities that occur when students write. While the first generation of studies was concerned with the linear stages of writing mostly influenced by the actual outcomes of the written product, the work of Flower and Hayes concentrates on the inner, thinking processes of students as they write.

The model by Flower and Hayes consists of several major units or parts of a system and how they are interrelated. The model begins with a "rhetorical problem" which involves the writer representing the problem that influences the writer's performance. From these representations, additional constraints enter upon the writing process. The expansion of the written text creates demands upon the writer. The writers use "knowledge stored in long-term memory" that includes their knowledge of the topic and the audience. Another factor is the writer's plans for dealing with the "rhetorical problem." The major writing processes in this model are "planning," "translating," and "reviewing." Each major process included several sub-processes. For example, when students plan their writing they must also generate ideas and organize them into a structure. The identification of goals during the planning process is another key component. The next major process is arranging the ideas into "visible language." The act of reviewing information is another process that includes the sub-processes of evaluating and revising. Ultimately, the writer usually decides when to move from one process to another, and this "monitoring" function is important and is determined by "the writer's goals and by individual writing habits or styles." Flower and Hayes view writers as constantly employing a group of cognitive processes as they "integrate planning, remembering, writing and rereading" (387). They do not find writing to be a sequential, step-like process. Writers are constantly planning and revising as they compose. However, Flower and Hayes assert that writing is an orderly process in which writers develop goals and create "a hierarchical network of goals that guides the writing process" (377).

The third generation of research questioned some of the work by Flower and Hayes. This generation examines the composing process from the perspective of how a society uses writing rather than how the individual learner uses cognitive resources. In particular, Bizzell (1982) acknowledges that the determination of how students compose is important and provides a description of that process. However, she criticizes the Flower and Hayes research for neglecting to explore the social factors in the development of writing. The social factors involve the "analysis of the conventions of particular discourse communities" (218). This analysis goes beyond examining the audience to exploring the expectations of that particular community to which the writer belongs and in which she or he shares some "virtues" by being part of a community. The discourse conventions are "conditioned by the community's work" (219).

In previous research, there was a lack of attention given to why writers are composing. The monitor in the Flower and Hayes model is responsible for making decisions about when to engage in certain composing processes, but it does not explain why the writer makes specific choices in different situations. Bizzell believes that composing models need to explain the social factors as well as the cognitive factors (as proposed by Flower and Hayes). The relationship between these sets of factors is an important consideration. Bizzell asserts that these factors need to be integrated to present a fuller picture of the composing process. She summarizes that the main factor missing from previous theoretical models is the "connection

to social context afforded by recognition of the dialectical relationship between thought and language." Bizzell proposes that the work by Vygotsky (1962) which explores the relationship of thought and language as the development of "verbal thought" to be useful. Vygotsky's analysis implies that it is inappropriate to separate planning and translating as two separate processes. In order to fill in the empty translating part of the Flower and Hayes model, Bizzell suggests that socio-linguistics provides a way to analyze thinking and language use as conditioned by the social context. This line of thought led other researchers to pursue the sociology of knowledge (Bazerman, 1983). This perspective envisions writing as a social act that occurs in established contexts such as the academic disciplines. Bazerman (1981) examines several disciplines and demonstrates how differences in each discipline influences the expectations of the readers. His work indicates the differences in the nature of inquiry among these disciplines and in the outcomes of those inquiries.

The research about writing over the last 25 years has focused primarily within the context of the particular writing students complete in school with an emphasis on essay writing in college composition courses. The three generations of research outlined above all contribute to an understanding of what characteristics distinguish good essays from poor ones. They also provide knowledge about the composing strategies of the most proficient student writers as contrasted with the less proficient ones. In many cases, college students were asked to respond to exam questions in which the writers assume they were supposed to demonstrate to their readers (the college faculty) that they knew what the readers expected them to learn. However, there are real questions that employers may have in which they are asking their employees to give information to their readers and to make reasoned judgements.

In general, college professors are interested in *how* students get the results and with the process of writing. A few research studies (e.g., Barton & Barton, 1981; Paradis, Dobrin, & Miller, 1985) conducted in the work environment suggest that supervisors in industry were mainly concerned with the final results and specific recommendations. While some faculty may emphasize the problem-solving process involved in writing an essay, employers "want information that will help them make decisions, which in turn will achieve organizational goals" (Barabas, 1990, xxii).

B. Speech Communication Framework

The NCES-commissioned papers in the speech communication area, reviewers' comments about these papers, and the NCES conference proceedings were reviewed in preparation for the development of the speech communication goals inventory. In addition, we conducted a literature review that examined the important skills identified according to faculty experts, policymakers, and employers. Many of these skills drawn from previous research studies were incorporated into the inventory that we developed. In particular, the organizational framework utilized in this study was drawn from the framework adopted and endorsed by the Speech Communication Association (SCA). In this section, we provide a brief overview of the major frameworks and research that has been conducted in the area of speech communication.

Communication experts have generally found it difficult to isolate specific listening and speaking skills which should be possessed by competent communicators (Rubin, 1982). Furthermore, there is little consensus on "the constituent definition of oral communication competence nor the operational skills which the construct represent" (McCroskey, 1982, p. 9). Although a substantial amount of material has been written to offer guidelines for the assessment of students' communicative competence, "almost as many definitions of the concept of competence exist as there are authors. These definitions are not specific about the components of competence and leave undefined certain crucial concepts which are necessary to understand the nature of communication competence" (Bostrom, 1984, p. 11). While many faculty, employers, and policymakers would agree that college graduates should learn behavioral and cognitive abilities to become competent communicators, it is difficult to reach an agreement about the specific nature of these skills. "On most campuses we cannot even get our faculty to agree on what should be included in our basic course!" noted McCroskey (in Bostrom, ed., 1984, p. 267).

The acquisition of basic communication skills is necessary for effective participation in society and in the workplace. A number of scholars (e.g., Dance & Larson, 1972; Duncan, 1968; Reusch, 1957) have suggested that there is a relationship between individuals' abilities to use the communication process and their abilities to function in society. In order for individuals to function effectively in society, they need to achieve a certain level of competence in the use of language and nonverbal behavior for the purpose of communication. This competence has been called "communicative competence."

The challenge in defining "communicative competency" seems to stem from the differences in three major perspectives: cognitive, behavioral, and social cognitive. The choice of perspective influences the definition and is important in the applications of the concept. The cognitive perspective usually consists of definitions that view competence as a mental phenomenon that is distinct and separate from behavior. Chomsky (1965) developed a perspective of linguistic competence that focused on the nature of linguistic knowledge which is the appropriate domain of inquiry rather than performance. Behavioral considerations were placed outside the domain of linguistic theory and research. Chomsky described and defined linguistic competence as the individual's knowledge of the structure of language. Scholars who advocate this concept believe that "the goal of competence theories is not the explanations of events or processes, but rather the discovery of the cognitive structure and mental representations that underlie events" (Wiemann & Backlund, 1980, p. 187). The major goal here is to create a set of idealized, formal rules that would underlie behavior.

The second perspective is a category of definitions that emphasize the performance aspect of communicative competency. This view refers to actual communicative behavior. Competence is viewed as a function of social skills and social outcomes rather than one's own perception of competence. This perspective suggests that communication competence is dependent upon certain skills that enable individuals to achieve their goals. In this area, some scholars have defined competence in the form of lists containing minimal levels of achievement (Allen & Brown, 1976; Bassett, Whittington, and Stanton-Spicer, 1978; Wood, 1981; Wood et al.,

1977). These lists have been based upon extensive reviews of literature. For example, Allen and Brown (1976) identified five performance dimensions of communication competence: controlling, feeling, informing, ritualizing, and imagining. In a similar manner, Ruben (1976) believed that seven dimensions were critical: display of respect, interaction posture, orientation to knowledge, empathy, interaction management, tolerance for ambiguity, and self role-oriented behavior. Wiemann (1977b) proposed a model with five major components including interaction management, empathy, behavioral flexibility, social relaxation, and affiliation/ support. Bassett, Whittington, and Stanton-Spicer (1978) identified four specific competence areas which comprise the skills that high school graduates should possess: communication codes, oral message evaluation, basic speech communication skills, and human relations. These competencies are applied to three different contexts including occupational, citizenship, and maintenance. Daly (1992, p. 26) noted eight major communication categories: "influence and compliance gaining as well as resisting influence attempts, information seeking and giving, affinity seeking and maintenance, conflict management, expressing oneself, explanations and accounts, coping strategies for problematic communication events, and negative behaviors that nonetheless, mark effectiveness." Despite these numerous communication competence studies, several categories appear repeatedly in the researchers' lists. These include empathy, interaction management, and behavioral flexibility. Empathy is usually considered to be the "other-oriented" component of competence. These abilities enable an individual to evaluate another's intentions and imagine oneself into the thinking, feeling, and acting of another individual. This skill provides knowledge for making decisions among communicative choices. Interaction management includes such skills as appropriate control over topics initiated and discussed, listening, taking turns appropriately when speaking, and other skills related to interactional goals. Behavioral flexibility refers to the individual's adaptation to the situation by making appropriate communication choices.

The framework proposed by Bassett et al. (1978) was adopted and endorsed by the Speech Communication Association (SCA). Rubin (1982) built upon the Bassett et al. framework and developed a communication competency assessment instrument that seeks to determine communication skills in the educational setting. All of the competencies in this instrument relate to the student's ability to function "in specific educational environments: in classrooms and with instructors, fellow students, and academic advisers" (Rubin, 1982, p. 21).

The third, more recent perspective, is social cognition. This view is "a process of representing knowledge about people and their relationships. This knowledge is generally believed to be acquired through participation in ongoing, dynamic interactions" (Sypher, 1984, p. 113). Roloff and Berger (1982) view social cognition as thought directed toward interaction. O'Keefe and Delia (1979) have asserted that interpersonal variables form the basis for communicative choices. This reasoning suggests the need to evaluate communication competence across situations since individuals may have cognitive and behavioral skills that lead to effectiveness in one setting but not in another (Sypher, 1984).

While the multitude of literature provided many skill statements, there were differences in the specific views of communication competence as noted above. The framework adopted for the

study described in this report was taken from the work originally conducted by Bassett et al., and subsequently adopted by the SCA as well as the foundation for an assessment instrument developed by Rubin (1982). The four major categories are basic speech communication skills, communication codes, oral message evaluation, and human relations. Specific examples within each major category were derived from a variety of relevant studies pertaining to college students' communication skills.

C. Critical Thinking Abilities Framework

The NCES-commissioned papers in the critical thinking area, reviewers' comments about these papers, and the NCES conference proceedings were reviewed in preparation for the development of the critical thinking survey. In addition, we conducted a literature review that integrated the important skills identified by faculty experts, employers, and policymakers. Many of these skills were drawn from previous research studies. In particular, the framework for this survey builds upon the work completed by Facione (1990). While the organizational structure draws from Facione's major categories and sub-units derived from his previous Delphi study, the individual items in each section reflect additional skills considered to be important by a diverse group of individuals.

There are many definitions and conceptualizations of critical thinking. Some definitions are implicit within national standardized instruments such as the critical thinking module of the Collegiate Assessment of Academic Proficiency (CAAP) program developed by the American College Testing (ACT) Company. Other expert scholars propose theoretical models and frameworks that more fully outline their conceptualizations. In this section of the report, a brief overview of some definitions of critical thinking that are embedded in models will be presented.

Robert Ennis (1987) defines critical thinking as "reasonable reflective thinking that is focused on deciding what to believe or do" (p. 10). He has developed an itemized list of skills and dispositions that are major components of critical thinking. Ennis believes that critical thinking is closely connected with creative thinking and problem solving. He views critical thinking as a rational process.

Critical thinking according to Richard Paul (1993) is "disciplined, self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thinking" (p. 462). It is an art of thinking about one's thinking in order to make it more clear, accurate, or "more defensible." This type of thinking requires "the mastery of intellectual skills and abilities." Paul considers the extent to which critical thinking is dependent on the ability of an individual to develop insight into egocentric and ethnocentric thinking, the tendency towards self-deception, and the growth of a moral character. His definitions include the ability to criticize oneself. However, the specific means to achieve this ideal state is unclear.

McPeck (1990) views critical thinking as important within the context of the disciplines and the knowledge within those fields. Only through an immersion in the disciplines can

individuals fully develop their abilities to think critically. McPeck includes actions as well as beliefs in his definition. He also advocates the importance of "reflective skepticism" which encourages the individual to find the faults of others.

Siegel (1988) notes "a critical thinker is one who is appropriately moved by reasons: she has a propensity and disposition to believe and act in accordance with reasons; she has the ability to assess the force of reasons in the many contexts in which reasons play a role" (p. 23). Siegel's theory asserts a close connection between critical thinking, rationality, and problem solving.

This brief overview of various definitions of critical thinking indicates that philosophers and cognitive/educational psychologists have some distinctions they maintain within their conceptualizations of these thinking abilities. These distinctions reflect differences in the approaches to methodologies, the study of modes of thinking, language use, roles of values in thinking, and the view of the teaching process. For example, Paul (1993) notes that cognitive psychologists approach thinking descriptively while philosophers approach it normatively. Psychologists tend to focus on "expert versus novice thinking, intradisciplinary thinking, and monological thinking" while philosophers concentrate on "rational, reflective thinking, on interdisciplinary thinking, and on multilogical thinking" (p. 448).

Overall, psychologists examine the cognitive structure and activities of the mind (Young, 1980). From this perspective, critical thinking "can be characterized by the ways in which the contents and mechanisms of human cognition are involved in the solution of problems and the making of decisions and judgments. Teaching is concerned with the development of these contents and mechanisms" (p. ix). While psychologists emphasize the importance of cognition, contemporary philosophers are concerned with the identification of methods (such as comparison or classification) that allows individuals to solve the abstract and practical problems of life.

There is some disagreement as to whether critical thinking is subject-specific or generalizable (Ennis, 1987; Johnson, 1992; McPeck, 1990). Can critical thinking skills be transferred from one subject to another? McPeck (1990) emphasizes that generalizable critical thinking skills do not exist and that thinking is always about a subject. Therefore, thinking detached from a discipline or subject cannot exist. The unresolved issue is how much knowledge of content is a significant factor in critical thinking. There is a general agreement that a student's familiarity with the subject matter plays an important role in the student's performance on thinking tasks in that area (Ennis, 1992; Ennis et al., 1987). Furthermore, Perkins (1985) stresses that many intellectual skills are context-specific. In a similar manner, Paul and Nosich (1991) emphasize that a critical thinker should consider the epistemological structures and intellectual standards within the confines of the discipline in which a problem is being addressed. This argument assumes that there can be no general critical thinking skills. Paul (1985) notes this is similar to assuming that when we write or speak, there can be no teaching of general writing or speaking skills.

In response to the claims that critical thinking is subject specific, Ennis (1987) suggests that there are general principles of critical thinking that bridge subjects and have application to

many subjects. Critical thinking may transfer to new situations. Ruggiero (1988) indicates that comparison of approaches of thinking instruction designed for different subjects reveal some variations to thinking instruction and some variations in terminology, but teach essentially the same cognitive skills. Ruggiero (1988) indicates that a number of approaches to develop thinking skills in a particular discipline have been successfully applied to other disciplines as well. According to Facione (1990) critical thinking has applications in all areas of life and learning. He cautions that "although the identification and analysis of critical thinking skills transcend, in significant ways, specific subjects or disciplines, learning and applying these skills in many contexts requires domain-specific knowledge. This domain knowledge includes understanding the methodological principles and competence to engage in norm-regulated practices that are at the core of reasonable judgments in those specific-contexts" (p. 5). However, the panel of experts who participated in Facione's Delphi study recommended that becoming skilled in critical thinking requires learning to use these abilities effectively in many different contexts. Students have multiple roles in society, particularly as citizens or employees who require the development of critical thinking skills and dispositions.

Despite the differences in these conceptualizations, critical thinking is generally thought to consist of two main general components, a disposition to think critically and a cognitive component. There was some consensus from Facione's Delphi study that critical thinking requires the use of cognitive abilities including the application of techniques, rules of reasoning, skills, or procedures. Facione's study was conducted with a group of 46 national experts, mostly faculty members in education, social sciences, or physical sciences. Through several rounds of surveys with this interactive panel, a consensus was reached concerning the ideal skills associated with a good critical thinker. An outcome from Facione's study was a classification of important skills and sub-skills which included interpretation, analysis, evaluation, inference, explanation, and self-regulation. This classification system was the basis of the Delphi study that we conducted with faculty, employers, and policymakers.

The experts in Facione's study did not view critical thinking as a body of knowledge delivered to students in a single additional course. "Like reading and writing, critical thinking has applications in all areas of life and learning. . . The instruction of critical thinking can occur in programs rich with discipline-specific content or in programs which rely on the events in everyday life as the basis for developing one's critical thinking" (p. 5).

Although a student may possess the cognitive abilities to think critically, the individual may not be motivated or inclined to use them. Therefore, scholars and researchers assert that critical thinking also includes an affective dimension often referred to as dispositions or traits of mind, which characterize a critical thinker's way of behaving (Ennis, 1987; Facione 1990, 1992; Halpern, 1992; Paul, 1992; Paul & Nosich, 1991; Perkins et al., 1993). Dispositions are critical to advanced reasoning. For example, a study found that while people may have the ability to generate arguments on the side of an issue opposite their own, they may not be inclined to explore the other side unless prompted or motivated (Perkins, Farady, & Bushy, 1991). Students can be intrinsically motivated when they perceive a situation as an issue. A key factor is curiosity which is triggered when students experience gaps in their own

knowledge. However, there are some practitioners and scholars who do not believe dispositions are part of critical thinking. In Facione's study, roughly one-third of the panel of experts viewed critical thinking as referring only to the cognitive skills and dispositions, but not to affective dispositions. This minority assert that good critical thinkers are those individuals who have certain skills and habits. If people are good critical thinkers, then they use their skills appropriately since good thinkers have some or most of these affective dispositions.

There is agreement among scholars that critical thinking should include meta-cognitive or self-monitoring skills (Beyer, 1988; Facione, 1990; Halpern, 1992; Marzano et al., 1988; Perkins et al., 1991; Swartz & Perkins, 1990). "Meta-cognition refers to what we know about what we know, or, in more formal language, our knowledge about knowledge" (Halpern, 1984, p. 15). Meta-cognition is being aware of one's thinking as one performs specific tasks and then using this awareness to control what one is doing.

Scholars of critical thinking emphasize that a student's thinking should also meet intellectual standards, also called norms or criteria of good thinking (Lipman, 1988, 1991; Paul, 1992, 1993). These intellectual standards implicit in critical thinking include clarity, relevance, accuracy, fairness, completeness, precision, depth, breadth, and adequacy. Intellectual standards represent legitimate concerns irrespective of the subject being explored or the question at issue (Paul, 1992).

Critical thinking is related to problem solving. However, in this report we make a distinction between these two skill areas and focus specifically upon critical thinking. Critical thinking usually involves reasoning about open-ended or "ill-structured" problems while problem solving is usually considered to be narrower in scope (Kurfiss, 1988). In problem solving as studied in cognitive settings, there is often only one correct answer to a complex problem and only a limited number of options or sometimes only one method to solve the problem. These problems are usually referred to as "well structured." The goal is to discover and implement a solution. Problem-solvers generally develop and refine their problematic situation. Then they analyze their current state, identify constraints, gather information, and generate and test at least one hypothesis until their goal is attained. Critical thinking involves reasoning about issues that have no single solution. Here the goal is to construct a realistic representation of the situation or issue that could be presented in a convincing argument (Kurfiss, 1988). While the representation of the model can be outlined in the form of a proposition that claims to account for all available information, it cannot be proven or tested. Therefore, it must be supported with appropriate reasoning and evidence. The process of developing support for a position most clearly distinguishes critical thinking from problem solving (Kurfiss, 1988). Critical thinking tends to be associated with the social and behavioral sciences while problem solving is often associated with mathematics and sciences.

Critical thinking is also related with other communication skills. Halpern (1984), Chaffee (1990), and Swartz and Perkins (1990) in their critical thinking textbooks underscore the relationship between literacy abilities and thinking. Relevant critical thinking skills in this area

include those that are necessary to comprehend and defend against the persuasive techniques that are embedded in everyday language. These skills also include listening and speaking skills used to clarify thinking or increase specificity. Furthermore, critical thinking includes critical reading and writing skills (Browne & Keeley, 1981; Paul & Nosich, 1991). For example, reading and listening skills relate to the individual's ability to assess the purpose, biases, and credibility of a speaker or author, and the ability to accurately identify the problem or issue being evaluated and the underlying assumptions of one's views (Halpern, 1992; Paul & Nosich, 1991). All of these communication skills are interrelated. Therefore, we included critical thinking aspects in the writing goals survey and the speech communication survey. Since there are so many ideal skills associated with critical thinking, we decided to create a separate survey to explore further the specific nature of what constitutes making reasoned judgements.

III. METHODOLOGY

A. Delphi Technique

We employed a Delphi survey technique to gather feedback from faculty, employers, and policymakers. This approach has been used for planning in many higher education settings to improve communication and reach some consensus about a variety of issues (Uhl, 1983). Uhl (1971) conducted a Delphi survey to identify institutional goals and obtain a convergence of opinion from diverse constituent groups. In a similar manner, Fox and Brookshire (1971a, 1971b) used the Delphi technique to obtain agreement among faculty on what should be considered for effective teaching.

For this current project, the Delphi technique helped us to develop and determine the range of possible skills and competencies for critical thinking and communication areas. This tool was particularly useful since the identification of these skills involves the collective judgment of diverse groups of stakeholders. The skills and competencies are more likely to be accepted if more people participate in its exploration than would be possible in personal or group interviews and meetings. Through the Delphi process, participants have adequate time for thinking and reflecting about these potential skills.

A diverse group of stakeholders participated in the Delphi process which provided some insights into the underlying assumptions leading to different judgments. Through this process, there was a consensus about the importance of certain skills from the initial round of surveys. This consensus was determined by the statistical procedures described in the data analysis section. Throughout the report, we highlight the areas of consensus. However, this does not mean that *all* participants in this study were in total agreement about the importance of certain skills; rather, the statistical procedures we used indicated that there were not significant differences in the responses between the groups nor within particular groups.

In the second round of surveys, participants reached some consensus about certain skills where no agreement existed from the initial round of surveys. This means that after the participants re-evaluated their positions, they reached an agreement about additional items which was again determined by the statistical procedures we employed. In the second round, participants were given the average group response for each item and were asked to re-evaluate their position. By providing the group average and asking for more reflection about certain items, the Delphi technique encourages consensus from groups of participants. However, if individuals disagreed with the group average, they described their reasons for having a different position in this second survey.

In this report, we will highlight minority and differing perspectives as well as areas where there are agreements. In summary, the Delphi method provided information about: (1) the range of ideas about the necessary competencies and skills, (2) a priority ranking of these competencies, and (3) some degree of consensus about these skills. While the Delphi technique

has certain advantages for this project, the main limitation is that personal interaction among participants was minimal. Therefore, the advisory boards and focus groups played a key role in helping us to refine our survey instruments before they were sent to the larger group of participants.

B. Development of Goals Inventories

We used three major strategies to develop the goals inventories. First, we reviewed the relevant literature in each skill area (writing, speech and listening, and critical thinking) including the commissioned papers (sponsored by NCES), reviewers comments about these papers, and the NCES workshop proceedings. Then we synthesized the skills that were repeatedly identified according to faculty experts and employers. From these extensive lists, we identified the specific skills that were mentioned by more than one author. We grouped sets of skills together under certain major headings that were derived from the literature. Then we used these sets of skills to develop a critical thinking goals inventory and separate surveys for speech and writing skills. Each inventory consisted of an organizational framework drawn from the literature. Therefore, this current study sought to build upon the findings of previous scholarly work.

This current study required the participation of those individuals closest to the educational process and outcomes in order for the results to be useful. Therefore, our second strategy was to form an advisory board for each skill area. We invited national faculty experts, employers, and policymakers to join each advisory board. Some of these individuals were selected since they had participated in prior NCES workshops. We believed this continuity was important so that we would build upon the previous exploratory workshops already completed. However, we also invited new individuals who had never participated in these discussions to join each board. These new individuals (from both community colleges and universities) were selected because they had published and conducted a great deal of research in the skills areas. We wanted to make linkages and connections with other research centers that focus on public secondary education (in these areas) as well as with professional associations. Therefore, advisory board members were selected from these organizations. The main role of this advisory board was to critique the draft versions of the goals inventories.

Our third strategy was to convene a focus group consisting of faculty, employers, and policymakers in each skill area. We invited some individuals from the NCES workshops. However, we also identified additional participants who had experience with instruction in communication and critical thinking. The purpose of the focus group was to review the instruments and identify ambiguities or areas that were unclear. We wanted to use clear, precise language that all participants would understand.

C. Feedback from Advisory Boards and Focus Groups

Each advisory board was convened at least once through a phone conference call. They were provided with draft versions of the survey instruments. During the conference call, they were

asked to critique them and offer recommendations about how to strengthen each instrument. Each board member offered constructive criticism and feedback.

We refined the instruments after we received feedback from the advisory boards. Then we convened the focus group members. Each group meeting lasted approximately three to four hours. We asked them to review a draft version of the instrument along with its accompanying cover letter. We incorporated the feedback received from the focus groups. Then we sent another version of the instrument to both the advisory board and the focus group members. Originally, we had planned to continue to get feedback throughout the development phase of the surveys from only the advisory board. However, many focus group members wanted to remain involved with the project, and, therefore, they reviewed the instrument an additional time. We consulted with individual advisory board members further as we refined the instrument by making individual phone calls to clarify points and gather more feedback.

Both advisory boards and focus groups made suggestions to strengthen the instrument. The advisory boards recommended organizational frameworks. Both groups offered ideas about items that should be added to the survey and noted areas where there was a duplication of items. They also recommended clearer wording to reduce some ambiguous terms. The focus groups, in particular, noted in some cases "academic jargon" which contained terms they did not understand. These participants also suggested a clearer set of instructions for the three major groups of respondents. In some cases, they recommended a slightly different organizational structure for the major categories in the surveys. For example, in the writing survey, the majority of individuals believed that a separate section about the generation of ideas was not necessary and could be incorporated into the pre-writing section of the survey. However, many individuals thought a separate section on collaboration was important.

After the focus group members completed the surveys, we discovered that most individuals ranked all items as extremely important within the context of the five choices they were given on the rating scale. Many members suggested changing the scale to a choice of nine ratings ranging from "extreme importance" to "medium importance" to "no importance." When we sent the surveys to focus group members with the new nine rating scale, there was a broader range or dispersion of responses.

There were a few areas of common concerns and areas of debate among the three different advisory boards and the three focus groups. Since some groups raised similar issues, we will highlight these concerns.

C.i. Defining the Context

Some individuals were troubled by the very notion of trying to reach a consensus across a diverse group of faculty, employers, and policymakers at a diverse group of organizations. For example, one advisory board member stated:

> Different audiences have different cultural and communication norms, which implies differences in background and in the topic. But different organizations within a society have different cultural and communication norms; a successful memo at Citibank will not work at IBM. In fact, there may be more important differences between memos in these two settings than there are between memos written for French versus Japanese audiences, which themselves are far from homogeneous.

They emphasized that college graduates use different communication skills in a diverse number of contexts.

Some individuals noted that the responses for certain items on the survey instruments depended on the specific situation and the specific type of communication that the college graduate was attempting to complete. Others were troubled by the definition of a college graduate to include both four- and two-year degree recipients in the same survey instrument. A focus group participant noted that "there is a development difference between students who finish with a two-year degree and a four year degree." However, other individuals cautioned about the separation of the associate degree recipient versus the baccalaureate degree graduate. A focus group member stressed:

> I think the goal [of this project] is to improve teaching and learning. It doesn't matter if you're a two-year, four-year, five-year student. You're in the context of learning to become someone who has and can demonstrate these skills and abilities. I'd like to disengage the discussion from being so dependent on two-year and four-year programs.

Another focus group participant agreed and stated:

> It's a little dangerous to totally distinguish between four-year and two-year graduates; certainly some of the two-year graduates we have are adult learners who have different expectations than those who are nineteen years old, but I think the same could be true for a four-year program.

This debate focused on whether college graduates should be separated between associate and baccalaureate degree students or integrated together.

Some individuals believed that important goals could be identified across contexts. As one professor stated:

> Let's look at these [writing goals] as a group, and as a curriculum committee let's go through them and figure out is this really what we want, is this what should be happening, is this what we can do. I would hate to see us deconstruct it [the writing goals] so much that nothing gets sent out. I think it could be a really useful learning tool and a very empowering tool to start a conversation in 600 institutions, if they're not already started in these areas.

Some individuals were most concerned about capturing every potential context and every type of differentiation while others were concerned about succumbing too much to reductionism so that the qualities sought from college graduates get lost or are never explored because it is too complex a process.

C.ii. Linking Results with Instruction in the Classroom

Both advisory board and focus group members emphasized the importance of linking the results from this current project to making improvements in classroom instructional strategies and assessments of student learning. A focus group member stressed that the most important question is "how do you raise the consciousness of people who are in the classroom both teaching and learning to affect the development of these skills which is really what it should be like." Another participant noted that the implementation of these goals is important, but it is a major challenge to structure classes successfully to achieve these goals. Many individuals believed it is crucial to build upon the results from this study to make improvements in the classroom. Without a link to the teacher in the classroom, there was a perception that some faculty would teach only some of these skills while perhaps missing important areas. Some participants noted that learning what each particular group of respondents believes are important skills could be useful "in terms of confirming why there is a growing sense of frustration and wanting to somehow take a look at those gaps." An individual remarked:

> I think that one of the really exciting and interesting things about this project is that it is going to help all of us better understand what kinds of things we want our students to learn. Not just to satisfy me, but to satisfy you and everyone else. It is so we don't have the discrepancy between the faculty saying, 'yes, you are educated' and then they go out in the world and business says 'you cannot do anything.'

Another professor concurred and remarked:

> I've been involved as an academician with practitioners out there. I'm always brought up short of reality. I think there's some real value here in communicating with each other and getting perspectives on this because I think you really do get a very limited, and sometimes myopic, perspective if you just talk to the academics.

A faculty member emphasized that the writing goals inventory represented "my wish list of what I hoped happened when teaching writing. I spend a lot of time on the road talking to faculty and there's a lot of faculty teaching writing who aren't doing half of these things." Others thought the goals in the surveys encompassed those things that they hope to teach and that they hope college students will learn as a result of their teaching.

A debate ensued within each group about whether the main question was what skills college graduates *should* have versus what skills they actually do possess. The majority of reviewers felt they lacked sufficient knowledge to determine or identify whether their own college

graduates actually attained certain skills. In addition, they believed there was a great deal of variation in the levels of students' competencies. They thought that definitions about what skills college graduates *should* achieve would be within their scope of expertise to evaluate. Therefore, both the cover letter and the instructions on the survey sent to participants emphasized that we were seeking feedback about what skills college graduates should possess.

C.iii. Expanding the Dialogue

A common theme cited by participants was the importance of expanding the dialogue. Some participants recommended that recent college graduates should be asked about the levels of skills they have achieved and whether they are adequately prepared for their current professional positions. Other participants emphasized the need to include faculty from all disciplines. For example, the development of communication skills are not the sole responsibility of writing professors or speech faculty.

An underlying current in the perceptions of some individuals was a deeper concern about how the results from this project would be used in the future. We emphasized that this current project was a small study designed to determine the extent to which there is or is not a consensus about the importance of various skills and abilities that college graduates should possess. We informed all focus groups and advisory boards that this is not a large nor long-term, conclusive study. Instead, we stressed that this was an initial step to gather feedback from a diverse audience about the importance of skills associated with effective writing, speech and listening, and critical thinking. The purpose of this study is to question to what extent do the expectations of experts in the academic fields actually bear some resemblance to the expectations of employers in the workplace and policymakers in state level higher education coordinating boards or accrediting associations.

D. Selection of Study Participants

A major goal for the selection of study participants was to identify and choose colleges and universities that reflected a national distribution of students. We used the enrollment data from the 1990-1991 enrollment survey for the Integrated Postsecondary Education Data Systems (IPEDS). The sample universe included all institutions that were part of the IPEDS with two exceptions. No proprietary schools were included since they do not award associate or baccalaureate degrees. We also excluded schools that enrolled less than 500 students since it would be difficult to find the appropriate numbers of faculty, employers, and policymakers to participate in this study.

We used a three step stratified random selection technique. Groups of institutions were first stratified by using the Carnegie Classifications (1987) to categorize institutions. The categories of research I and II, doctoral granting I and II, comprehensive I and II, and liberal arts I and II

were each collapsed into the categories of research, doctoral granting, comprehensive, and liberal arts. The Carnegie Classifications for other professional institutions (such as teachers colleges or religious schools) were collapsed into one category. This step yielded six cells.

We conducted the second stratification by using the regional accreditation codes which includes six different organizations (e.g., New England Association of Schools and Colleges, Middle States Association of Colleges and Universities). This stratification was employed to obtain institutions that reflected different geographic regions in the United States. This step yielded a six (Carnegie Classification) by six (accrediting agency) matrix or 36 cells. We conducted the third stratification by employing the type of control, either public or non-profit private. This step yielded a final 6 x 6 x 2 matrix of 72 cells.

We determined institutional size by a median split within Carnegie Classification categories with those institutions at or below the median labeled as small and those with enrollments greater than the median labeled as large. This was used to check for variation in student enrollments across the selected institutions.

To determine the proportion of the database institutions in each of the 72 cells, we used a crosstab procedure. The resulting percentage was used to determine the number of institutions to draw from each cell by multiplying 150 (the initial number of institutions needed) by the percentage in each cell. All cells were represented by at least one institution.

Random numbers from the uniform distribution were assigned to each institution within each cell. The institutions were then sorted by the random numbers, and insitutions drawn with six percent coming from each cell. The final yield was a total of 150 institutions.

Even though academic administrators at 150 different institutions were invited to participate in this study and nominate colleagues, ultimately administrators from 78 institutions responded positively with completed nomination forms (see Table 1). The institutions in the sample differed slightly from the population of potential schools. While the population of community colleges is approximately 41.3 percent of the total institutions in the United States, only 28.2 percent actually agreed to participate in our study (see Table 2). Slightly higher proportions of research, comprehensive, liberal arts, and doctoral granting institutions responded to our invitations. None of the invited professional schools (such as teachers colleges or business schools) agreed to participate although only 4.3 percent of the population of institutions are in this category. There was a fairly even distribution of the selected institutions across the six regional accrediting areas (see Table 3). A slightly higher proportion of institutions accredited by Middle States and Northwest Association participated while a slightly lower proportion from North Central and the Southern regions were actually involved.

The group of institutions selected closely approximated the population of institutions in terms of public versus private control (see Table 4). However, a higher proportion of institutions with large student enrollments participated than small institutions (see Table 5).

Table 1. Participating Institutions by Carnegie Type

RESEARCH	
Cornell University Howard University Northwestern University Texas A&M University	University of California, Los Angeles University of Hawaii, Manoa University of New Mexico
DOCTORATE	
The American University Biola University Drake University	Georgia State University The University of Akron University of Notre Dame
COMPREHENSIVE	
Aquinas College Austin Peay State University Black Hills State University Bloomfield College Brigham Young University, Hawaii California State University, Fullerton Eastern New Mexico University Freed-Hardeman University Gonzaga University Ithaca College Millikin University	Rochester Institute of Technology University of Alaska, Fairbanks University of Baltimore University of Massachusetts, Boston University of Puget Sound University of Southern Colorado University of Texas, El Paso University of Texas, Permian Basin University of Wisconsin, La Crosse Xavier University
	continued on next page

The academic vice-president or the equivalent senior academic administrator (such as provost or dean of faculty) at each institution was contacted with a letter of invitation to participate in the study. The cover letter explained the purpose of the study. We asked each administrator to nominate three faculty members each in the areas of writing, speech communications, and critical thinking. They were also asked to recommend three employers who hired their college graduates and three policymakers.

From the 150 institutions we contacted, 50 academic vice-presidents returned incomplete nomination forms even though they agreed to participate. They usually recommended the requested faculty members. However, some administrators (at a variety of institutions) did not have any employer recommendations because they were not familiar with what particular companies hire their graduates. In these cases, we contacted the academic vice-president again and asked for a referral to another individual who would be knowledgeable about employers. At ten institutions, the directors of career counseling responded with more than the necessary number of employers who hire and recruit students from their own particular institution.

Table 1. Continued

LIBERAL ARTS	
Atlantic Union College	Miami University of Ohio
Clinch Valley College	Mount Ida College
Dakota State College	Neumann College
Eastern Nazarene College	Northwest Nazarene College
Franklin and Marshall College	Notre Dame College of Ohio
Hartwick College	Pacific Union College
Lincoln University	Rust College
Livingston University	St. Mary's College of Maryland
McKendree University	Teikyo Westmar University
Methodist College	University of Findlay
Metropolitan State University	Whitman College
TWO-YEAR	
Becker College	Howard Community College
Bergen Community College	John C. Calhoun Community College
Bismarck State College	LaGuardia Community College (CUNY)
Centralia College	Mohawk Valley Community College
Columbia Basin College	Mountain View College
East Los Angeles Community College	Penn State University, Schuylkill
Erie Community College	Pierce College
Finger Lakes Community College	Shelby State College
Guilford Technical Community College	Southwest Mississippi Community College
Harford Community College	Three Rivers Community College

Table 2. Participating Institutions by Collapsed Carnegie Units

Carnegie Type	Sample		Population	
	Number	Percentage	Number	Percentage
Comprehensive	20	25.6	573	25.1
Doctorate	7	9.0	103	4.5
Liberal Arts	22	28.2	463	20.3
Other Profession	0	0	99	4.3
Research	7	9.0	100	4.4
Two-Year College	22	28.2	942	41.3

Some senior academic administrators were not willing to nominate policymakers. We phoned these administrators and learned that some of these leaders were afraid that potentially unfavorable results would be shared with their legislators or boards of trustees. They were also concerned about getting negative feedback from their own policymakers. These eight

administrators from particular institutions had completed nomination forms with the exception of policymakers. In these cases, we directly contacted policymakers in those particular states. We sent letters of invitation to the leaders of higher education coordinating boards and regional accrediting associations. Many of these policymakers agreed to participate.

We included institutions in this study if they had at least completed all of the appropriate nominations for faculty. We wanted at least three nominations in each category so that we would have extra individuals to compensate for those people who would decline to participate.

Table 3. Regional Accrediting Status

Agency	Sample		Population	
	Number	Percentage	Number	Percentage
New England Association of Schools and Colleges	6	7.7	179	7.9
Middle States Association of Colleges and Universities	20	25.6	403	17.9
North Central Association of Colleges and Universities	20	25.6	765	34.0
Northwest Association of Schools and Colleges	8	10.3	120	5.3
Southern Association of Colleges and Schools	16	20.5	610	27.1
Western Association of Schools and Colleges	8	10.3	176	7.8

Table 4. Control of Institutions

Type	Sample		Population	
	Number	Percentage	Number	Percentage
Public	45	57.7	1384	60.7
Private, non-profit	33	42.3	896	39.3

Table 5. Student Enrollments

Size	Sample		Population	
	Number	Percentage	Number	Percentage
Small	29	37.2	1142	50.1
Large	49	62.8	1138	49.9

Therefore, we tried to get additional nominations from these senior administrators who nominated only one faculty member in each skill area. If we did not receive additional recommendations, these institutions were excluded from the study.

For each nominated person, we contacted the individual by sending a personal letter indicating the specific senior administrator of a particular institution who had nominated them. This letter also included a description of the study and its purpose as well as the estimated amount of time to complete each survey. However, it was difficult to get nominated employers and policymakers to participate. Some individuals had too many commitments and cited their intense work schedule as the main reason for their inability to participate Therefore, we made personal phone calls to individuals in these two groups and were successful in recruiting additional participants.

In each particular skill area, we had a group of faculty, employers, and policymakers who completed our surveys (see Table 6). A total of 468 individuals were invited to complete the initial writing survey. The response rate from participants ranged from 35 percent for employers to 54 percent for faculty members. A very similar response rate was evident for the initial speech survey. A total of 478 individuals were invited to complete the critical thinking goals inventory. The response rate ranged from 21 percent for employers to 51 percent for faculty. In all cases, the response rate was highest for faculty and lowest for employers.

In the second round of surveys, we invited the same individuals who had completed the initial surveys to participate again and re-evaluate their own judgements. The response rates for the second rounds of surveys remained high with a range of 64 percent of policymakers responding to the critical thinking instrument to 97 percent for employers responding to the same survey (see Table 7). The faculty constituted over one-half of the participants in the total respondent group with employers comprising nearly one-quarter and policymakers comprising nearly one-fifth of this group.

E. Data Collection

All participants received the initial survey in the early part of the Fall 1993 semester or term. We designed three separate survey instruments in the following areas: writing, speech, and critical thinking. The instructions for each instrument were identical. We asked participants to indicate the importance of a variety of skills for college graduates. For the purpose of this study, we defined college graduates as both associate and baccalaureate degree recipients. The participants rated what skills students should have for work and citizenship. The scale ranged from extreme importance with a rating of "1" to no importance with a rating of "9." We asked participants to consider these skills in terms of the expectations they would have for individual students or employees within their current professional organization when they completed these surveys. For example, we asked faculty to consider that "if you are a college professor (at either a community college or a four-year institution), answer the items in terms of the skills you would expect from graduates of your *own* institution."

Table 6. Participants Responding to Initial Survey

Round 1 Survey	Type of Respondents	Individuals Invited	Number of Respondents	Response Rate Percent	Percent
Writing	Faculty	228	123	54	57.8
	Employers	152	53	35	24.9
	Policymakers	88	37	42	17.4
Writing Total		468	213		100.0
Speech	Faculty	208	115	55	54.8
	Employers	161	55	34	26.2
	Policymakers	91	40	44	19.0
Speech Total		460	210		100.0
Critical Thinking	Faculty	224	113	51	62.8
	Employers	165	34	21	18.9
	Policymakers	89	33	38	18.3
Critical Thinking Total		478	180		100.0
Overall Total Round 1		1406	603		

Table 7. Participants Responding to Second Survey

Round 2 Survey	Type of Respondents	Individuals Invited	Number of Respondents	Response Rate Percent	Percent
Writing	Faculty	123	101	82	58.0
	Employers	53	43	81	24.7
	Policymakers	37	30	81	17.2
Writing Total		213	174		99.9
Speech	Faculty	115	90	78	53.6
	Employers	55	43	78	25.6
	Policymakers	40	35	88	20.8
Speech Total		210	168		100.0
Critical Thinking	Faculty	113	92	81	63.0
	Employers	34	33	97	22.6
	Policymakers	33	21	64	14.4
Critical Thinking Total		180	146		100.0
Overall Total Round 2		603	488		

If we did not receive the completed surveys within four weeks, we sent postcards to participants reminding them about the project and encouraging them to return the surveys in the next two weeks. When some individuals had still not responded, particularly for the employer and policymaker groups, we then called them as the final follow-up strategy.

In the second survey, we included items with significant differences between the three respondent groups. For each item, we indicated the overall group mean. We asked each respondent to re-evaluate his or her position about the importance of these items. We also provided space for individuals to write their own comments outlining their reasons for disagreeing with the group mean. We followed the same procedures as described above to get participants to return their surveys.

F. Data Analysis

We used several stages in the statistical analysis of the data. These multiple steps were necessary since we did not have equal numbers of participants in the three groups of faculty, employers, and policymakers. The number of faculty who participated versus the employers and policymakers was extremely disparate. For the regular Analysis of Variance (ANOVA) model, it is assumed that the cell sizes of the three groups are balanced or equal and that there are equal variances among the three population groups. This model would give too much weight to the "within group sums of squares" for the faculty since these participants were the largest group.

To compensate for these violations of the assumptions of the regular ANOVA model, we used the General Linear Model (GLM) to perform the analysis of variance. The GLM procedure (SAS, 1990) provides this analysis. This procedure was selected since it produces the necessary associated statistics required for this analysis. The first statistic was the least squares means which estimates the marginal means that would have been expected if the design had been balanced along with the probability that the expected means are equal. The second associated statistic was Tukey's studentized range test which calculates a confidence interval around the differences between the means. If the least square means probability was less than .05 and the lower confidence limit of the difference between two groups was close to zero or above, the question was included in the next step of the analysis.

To produce the probabilities for the assumption of equal variances, unequal variances, and an associated F Test for the equality of variances, we used the T-Test next . Due to the small sample size of employers and policymakers, we could not determine a reliable estimate of the population variance for each group. Therefore, the associated F Test for equal variances was not used. We employed the criteria that probabilities calculated for both equal and unequal variances had to be less than .05 for the differences between means to be judged significant. The specific items from the first questionnaire with these significant differences were included in the second survey. The same analysis procedures were followed for the second round of surveys.

We also conducted a reliability analysis to determine the internal consistency of the instruments with respect to the individual sections as well as the instruments overall. High reliability coefficients greater than $a = .65$ demonstrate the consistency with which the sections are addressed by the respondents. A factor analysis was executed to demonstrate the construct validity of the instruments. We used this analysis to determine the validity of the instruments' structures or divisions into specific sections.

IV. SURVEY RESULTS: IDENTIFICATION OF THE IMPORTANT SKILLS

In this section, we present the results from the communication and critical thinking goals inventories. We highlight the areas of consensus among faculty, employers, and policymakers. We also report the areas where significant differences existed between the three respondent groups. We have incorporated the respondent comments to illustrate reasons for their different judgments.

We report the results from the two rounds of surveys, including the total respondent group mean. In the areas of disagreement, we note the group average rating by each of the three respondent groups. The responses from the *individual* participants usually ranged from "extreme importance" (a rating of "1") to "no importance" (a rating of "9"). In section II, we describe more fully the data analysis procedures.

A. Writing Skills

A.i. Audience Awareness

Most researchers agree that "audience awareness," or the ability to develop a representation of the potential readers of a text, is one of the most important cognitive skills for success in writing. Ideally when writers begin writing, they know who their audience will be and what relationship they hope to establish with them. Several empirical studies (Atlas, 1979; Beach & Anson, 1988; Berkenkotter, 1981; Flower & Hayes, 1980b) have shown that audience awareness develops during the college years. Some of these studies (e.g., Black, 1989; Rubin, 1984) have characterized "audience awareness" in greater detail. Therefore, we included eight different items in this section of the survey.

After the first round of Delphi surveys, faculty, employers, and policymakers agreed about the importance of three specific skills (see Table 8a). College graduates should be able to consider how an audience will use a particular document, choose words that their audience can comprehend, and understand the relationship between the audience and the subject material. However, from the initial Delphi survey, there were five areas where respondents significantly differed (see Table 8a). Faculty rated *all* five skill areas as significantly more important than did either the employer or the policymaker. After the second round of surveys, the participants' responses reached a statistically significant agreement about the importance of an additional three skills. College graduates should be able to address audiences' different cultural and communication norms; understand the audiences' values, attitudes, goals and needs; and understand the relationship between audience and themselves (see Table 8b).

After the second round of surveys, there were two specific skills where significant differences still existed among two of the groups (see Table 8b). Faculty continued to rate significantly higher than did employers the skills of addressing audiences whose backgrounds in the topic vary widely and defining multiple anticipated audiences. These skills are interrelated and

Table 8a. Analysis of Variance — Awareness and Knowledge of Audience

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Consider how an audience will use the document	2.70	4.53	1.76	.0790*
Choose words that their audience can understand	1.88	1.32	1.56	.4298*
Understand the relationship between the audience and the subject material	2.05	.07	1.28	.9495**
Address audiences whose backgrounds in the topic vary widely	2.91	13.66	2.26	.0028*
Address audiences whose cultural and communication norms may differ from those of the writer	2.92	13.96	2.71	.0065*
Define their anticipated multiple audiences	2.95	21.87	2.09	.0001*
Clearly understand their audiences' values, attitudes, goals, and needs	2.58	19.47	1.57	.0001*
Understand the relationship between the audience and themselves	2.29	5.94	1.45	.0179*
SKILLS — ROUND 2				
Address audiences whose cultural and communication norms may differ from those of the writer	2.94	3.98	1.52	.0756*
Clearly understand their audiences' values, attitudes, goals, and needs	2.83	3.02	1.55	.1457*
Understand the relationship between the audience and themselves	2.29	2.17	1.18	.1615*
Address audiences whose backgrounds in the topic vary widely	2.90	3.86	1.44	.0710*
Define their anticipated multiple audiences	2.92	7.56	1.35	.0045*
* Significant differences noted in TUKEY and Least Square Means				

Table 8b. Disagreements about Awareness and Knowledge of Audience Between Respondent Groups

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Address audiences whose backgrounds in the topic vary widely	3.43	2.62	3.08	.0012	n.s.	n.s.
Standard Deviation	1.59	1.41	1.67			
Address audiences whose cultural and communication norms may differ from those of the writer	3.45	2.62	3.08	.0032	n.s.	n.s.
Standard Deviation	1.81	1.48	1.87			
Define their anticipated multiple audiences	3.60	2.57	3.18	.0001	n.s.	.0101
Standard Deviation	1.68	1.40	1.20			
Clearly understand their audiences' values, attitudes, goals and needs	3.17	2.22	2.84	.0001	n.s.	.0080
Standard Deviation	1.44	1.16	1.24			
Understand the relationship between the audience and themselves	2.47	2.09	2.66	n.s.	n.s.	.0071
Standard Deviation	1.30	1.19	1.07			
SKILLS — ROUND 2						
Address audiences whose backgrounds in the topic vary widely	3.26	2.75	2.87	.0394	n.s.	n.s.
Standard Deviation	1.38	1.17	1.01			
Define their anticipated multiple audiences	3.42	2.71	2.90	.0069	n.s.	n.s.
Standard Deviation	1.52	1.04	.96			

EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant

many respondents made the same remarks for both items as illustrations for their differences in perceptions.

Part of the reason for these disagreements is that some employers view their own organizations as very homogeneous with little variation in terms of their organizational contexts for writing assignments. An employer states "as a police organization our requirements are somewhat unique. The vast majority of a police officer's writing consists of factual reporting with writing that is mostly devoid of creativity or emphasis. For legal reasons, reports cannot exceed the scope of the officer's field notes. This skill is not appropriate to police report writing, unless it is applied to the preparation by a few officers of lesson plans or other public presentations." Other employers state "entry level hires have limited involvement with varied audiences" and "I view this skill as something more advanced, it is of medium importance." Some employers view these skills as advanced abilities that new employees do not possess when they enter the work force.

There are disagreements among some employers who believe it is critical to write a document so that individuals with different levels of knowledge about the topic will understand it. These employers may be individuals from more complex organizations who do have responsibilities to multiple audiences. The ability to address audiences whose background in the topic varies widely is "extremely important with the diversity in companies today" states an employer. Another employer notes this skill is "very basic. Without it the graduate will not be educated to an acceptable level for professional growth." "In a cross-functional team environment, this [skill] is integral to share knowledge and exert influence. Our teams include individuals from finance, manufacturing, market research, product development, etc. Now [this is] more complex in global organizations" states an employer.

Policymakers tended to agree that writing for diverse audiences is important. "Attorneys must be able to persuade audiences that the rule of law is critical to any society if it is to be a free society," states a policymaker. Another administrator remarks "I lead 100 clergy and this skill is critical to success." "[This is] a realistic demand for successful communication" states another policymaker. However, a respondent notes that this skill is "probably not important for a community college graduate." A policymaker notes that college graduates need to "expect [a] wide range of backgrounds (especially educational level) in [the] anticipated audience."

The majority of faculty rated the ability to address and define multiple audiences as extremely important. Faculty teach a diverse group of students with diverse career goals. "I rated all of the audience high because the entire purpose of writing is to reach someone, something that students often don't realize" states a professor. Another faculty member agrees that "many of our students begin their career here writing only for themselves. They need to learn to adapt [to] the audience's point of view." "I rank all of these higher than the group mean. Audience is an important part of the writing process because the product isn't complete until it has been understood as accurately as possible. Understanding [the] audience allows the writer to choose a tone and voice that will not alienate the reader" states an instructor. In a similar manner, another professor emphasizes "If they [college graduates] cannot adopt their presentation to an

appropriate level, no communication will take place. Pitched too 'high' the audience will not understand; pitched too 'low' the audience may be insulted."

Some faculty believe the ability to address and define multiple audiences is developed in the workplace once students enter a specific occupation. "An ability to write for audiences comes only with quite extensive knowledge of and experience with members of that audience. Often that knowledge and experience are gained in the workplace rather than in the classroom" states a professor. Another faculty member concurs that this skill "is not easy to do in classroom settings, but [is] vital in business/organization settings." "The only antidote to super-specialization is the ability to speak to diverse audiences" notes another faculty member. A professor laments that "much poor writing and almost all poor public speaking is caused by the inability to gear material to the audience." A professor from the western part of the United States remarks that "sensitivity to audience [is] especially important in this area [of] southern California, and I think especially in writing." California has a more diverse population than many other states, and this particular comment illustrates how the geographic region where students and faculty work may influence their responses.

There were some faculty who did not believe the skill of addressing audiences whose background varies *widely* was extremely important. "The 'widely' is a high standard. Learning, for example, to make complex ideas simple may require more time. Understanding the wideness of cultural variation may require more life experience" emphasizes a professor. Another professor agrees "these are skills that, while desirable, require more experience than most college graduates will have." One professor notes "many graduates will never address an audience in speaking or writing whose background is unlike their own."

Other faculty, employers, and policymakers noted the challenges of defining multiple audiences accurately. A common criticism of writing is that students do not learn to write for real audiences (Faigley et al., 1985). While this skill is viewed as extremely important by some respondents, others question the ability of college graduates to actually achieve it. As one faculty member notes "the act of defining an audience, as opposed to a relationship, is never really possible." However, an employer questions "If you don't know who your audience(s) are going to be, how do you know how to properly say what needs to be said?"

In this section of the survey, faculty, employers, and policymakers disagreed about the importance of addressing audiences whose backgrounds in the topic vary widely and defining anticipated multiple audiences. However, they did agree that six specific skills were important for college graduates to develop. The most important skill, rated as extremely important, was the ability to choose words that audiences can understand followed by the ability to understand the relationship between the audience and the subject material and between the audience and themselves. The remaining skills they agreed upon were rated slightly lower in importance and included the ability to consider how an audience will use the document; understand audiences' values, attitudes, goals, and needs; and address audiences' different cultural and communication norms.

A.ii. Purpose for Writing

Writers usually generate goals to help them reduce the number of constraints they must work with when they compose (Flower & Hayes, 1980b). Often writers develop goals from their long-term memory, but most goals are created by the writer in response to a specific situation (Faigley et al., 1985). Through their research, Flower and Hayes discovered that students create and revise goals throughout the composing process. These goals are often evaluated and revised in light of what has been written. Goals tend to develop as the written text progresses, and they interact with the text itself as well as with the situation for which the writing is being completed.

Audience and purpose are often described as important elements of the rhetorical situation. Frameworks of the rhetorical situation (Bitzer, 1968; Booth, 1963) usually include a persona (the image the writer wishes to project), an audience (the readers), and a subject (the information that the writer desires to impart) (Faigley et al., 1985). Therefore, approximately one-half of the items in this section of the survey indicated the relationship between the writer, subject, and the audience relative to the purpose for writing.

There were four areas of agreement from a total of seven regarding the importance of conveying the purpose for writing from the first round of surveys (see Table 9a). These skills included the ability to state purpose(s) to audiences, use vocabulary appropriate to subject and purpose(s), arrange words within sentences to fit the intended purpose(s) and audience(s), and to make appropriate use of creative techniques of humor and eloquence when approaching a writing task.

There were three areas of statistically significant variations in responses between the three stakeholder groups. Faculty rated the awareness of multiple goals/purposes and the use of an appropriate tone of voice as more important than did the employers and the policymakers (see Table 9b). However, the policymakers rated significantly higher the ability for college graduates to draw on their own individual creativity and imagination to engage their audience than did employers. Their average ratings were also higher than faculty members' evaluations. After the second round of surveys, the three respondent groups agreed on the importance of creativity. However, no consensus was reached in two areas (students should be aware of multiple purposes/goals; students should use an appropriate tone of voice) (see Table 9b).

Faculty rated significantly higher than did employers and policymakers the ability to be aware of multiple purposes and goals. However, within the faculty group there were disagreements. Some faculty thought that *multiple* purposes was an extreme standard, and many times there would only be one purpose or goal that college graduates would attempt when they write. Faculty were concerned that students would become too "self-conscious." Other faculty members disagreed. As one professor states "effective writing is purposeful; most writing has more than one purpose [and] sometimes conflicting ones." Additional faculty concur and remark this "basic skill [is] needed," a "greater awareness of purpose will increase the likelihood of achieving it," and "seeking this goal provides the key to successful expression

Table 9a. Analysis of Variance — Purpose for Writing

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
State their purpose(s) to their audiences	2.04	.17	1.83	.9097*
Use vocabulary appropriate to their subject and purpose(s)	1.81	.63	1.06	.5546*
Arrange words within sentences to fit the intended purpose(s) and audiences	2.18	1.51	1.52	.3710*
Make appropriate use of creative techniques of humor and eloquence when approaching a writing task	3.65	7.61	3.05	.0845*
Be aware of the multiple purposes and goals they are acting on when they write	2.31	11.04	1.38	.0004*
Use an appropriate tone of voice	2.28	8.78	1.79	.0082*
Draw on their individual creativity and imagination to engage their audience	2.97	13.86	2.75	.0073*
SKILLS — ROUND 2				
Draw on their individual creativity and imagination to engage their audience	2.72	2.81	1.41	.1387*
Be aware of the multiple purposes and goals they are acting on when they write	2.17	4.66	0.75	.0025*
Use an appropriate tone of voice	2.11	2.53	.98	.0788*
* Significant differences noted in TUKEY and Least Square Means				

and clarity of thought." A professor reiterated his point that this skill is extremely important since "students have no clue *why* they write or how to use themselves and their feelings to form their writing."

Policymakers cautioned that college graduates should be not "get paralysis from multiple purpose analysis," and some believe that "entry level workers [are] probably still too inexperienced" to achieve this skill. Some employers echoed this concern. As one employer notes "don't make communication too complex; keep it simple." However, other policymakers believe this skill is most important and that college graduates need to "know what they want to say."

Table 9b. Disagreements about Purpose for Writing Between Respondent Groups

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Be aware of the multiple purposes and goals they are acting on when they write	2.66	2.03	2.69	.0013	n.s.	.0078
Standard Deviation	1.22	1.09	1.36			
Use an appropriate tone of voice	2.61	2.03	2.59	.0129	n.s.	.0151
Standard Deviation	1.48	1.31	1.17			
Draw on their individual creativity and imagination to engage their audience	3.56	2.80	2.65	.0068	.0114	n.s.
Standard Deviation	1.78	1.60	1.66			
SKILLS — ROUND 2						
Be aware of the multiple purposes and goals they are acting on when they write	2.40	1.99	2.53	.0032	n.s.	.0397
Standard Deviation	.73	.73	1.33			
Use an appropriate tone of voice	2.19	1.98	2.43	n.s.	n.s.	.0259
Standard Deviation	1.03	.99	.93			
EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant						

There were also disagreements between faculty and policymaker groups about the importance of using an appropriate tone of voice. Some faculty thought that this skill was "too obvious to need special instruction" while others believed that this skill was "not as important as some other goals." One professor stated "if [students] can't do this, they're lost from the start." Another professor commented "unfortunately some writers have only one tone even after being educated." Faculty members cautioned "an inappropriate tone could destroy common ground. For example, authoritarian or informative in an egalitarian environment" and "inappropriate tones alienate readers."

Policymakers shared similar concerns about the tone of voice. They remarked that the group "mean [is] much too low; graduates should be expected to have at least a rudimentary understanding and ability." Some policymakers disagree. They note the "tone is less important compared to clarity and purpose" and "the substance is more crucial than the style."

Overall in this section of the survey, the three respondent groups disagreed about the importance of using an appropriate tone of voice and being aware of multiple purposes when writing. However, they did agree that five skills were critical for college graduates to achieve. The most important skill rated as extremely important was the ability to use vocabulary appropriate to the subject and purpose(s) closely followed by stating purpose(s) to audiences, arranging words within sentences to fit the intended purpose(s) and audience(s), and drawing on individual creativity and imagination. Respondents rated the ability to make appropriate use of creative techniques of humor and eloquence when approaching a writing task as medium importance.

A.iii. Pre-Writing Activities

The pre-writing phase of composition usually involves planning activities that help writers prepare for their writing task. A planned writing task is an activity that has been thought out and designed prior to its expression. It requires preparation that often includes an analysis or creation process in order to generate ideas for writing (Carnevale et al., 1990; Flower & Hayes, 1980a; Loacker et al., 1984). There was much less agreement in this area with only three items of consensus and eight items of disagreements from the first round of surveys. All stakeholder groups believed that college graduates should be able to discuss their piece of writing with someone to clarify what they wish to say, research their subject, and identify problems to be solved that their topic suggests (see Table 10a).

In five of the seven areas with disagreements, faculty rated certain skills significantly higher than did employers or policymakers (see Table 10b). These included the ability of college graduates to analyze their own experiences to provide ideas for writing; retrieve material from memory; plan the writing process using effective writing strategies and techniques; locate and present adequate supporting material; and focus and then narrow the plan by recognizing the rhetorical problem(s) they wish to solve. There were no significant differences between policymakers and employers relative to these six areas. However, in the seventh ability area of clarifying policy and position before writing, there were different perceptions. Both employers and policymakers rated this skill significantly higher than did the faculty.

After the second round of surveys, the same seven specific skills still had statistically significant different ratings (see Table 10b). Again, similar trends emerged as those found from the first round of surveys. Two of the differences this time were relative to the skills of clarifying policy and position before writing as well as analyzing their own experiences for ideas. Policymakers agreed with faculty about the importance of these skill. However, employers in this second survey rated the clarification of one's view significantly higher than did the faculty members.

College graduates should analyze their own experience to provide ideas for their writing. Faculty rated this particular skill significantly more important than did employers. A professor states "this helps to 'place' students and put themselves into it." Faculty members remark that

Table 10a. Analysis of Variance — Pre-writing Activities

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Discuss their piece of writing with someone to clarify what they wish to say	3.33	5.10	3.53	.2380
Research their subject	1.86	.56	1.17	.6233
Identify problems to be solved that their topic suggests	2.47	4.46	1.51	.0540
Analyze their own experiences to provide ideas for their writing	2.72	32.86	2.08	.0001*
Create ideas for their writing	2.52	15.95	2.26	.0011*
Retrieve material from their memories to write	3.17	36.26	2.59	.0001*
Plan writing processes, using effective writing strategies and techniques	2.32	16.02	1.62	.0001*
Clarify their policy and position before writing	3.23	30.88	4.43	.0012*
Locate and present adequate supporting material	1.81	5.33	0.92	.0035*
Focus and then narrow their plan by recognizing the rhetorical problem(s) they wish to solve	2.76	15.44	2.06	.0007*
SKILLS — ROUND 2				
Analyze their own experiences to provide ideas for their writing	2.79	4.99	1.22	.0183*
Create ideas for their writing	2.73	6.73	1.11	.0029*
Retrieve material from their memories to write	3.02	5.34	1.47	.0286*
Plan writing processes, using effective writing strategies and techniques	2.02	5.14	0.60	.0003*
Clarify their policy and position before writing	3.05	7.43	2.22	.0377*
Locate and present adequate supporting material	1.83	3.58	0.51	.0011*
Focus and then narrow their plan by recognizing the rhetorical problem(s) they wish to solve	2.76	5.58	1.06	.0061*
* Significant differences noted in TUKEY and Least Square Means				

Table 10b. Disagreements about Pre-writing Activities Between Respondent Groups

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Analyze their own experiences to provide ideas for their writing	3.48	2.25	3.08	.0001	n.s.	.0039
Standard Deviation	1.62	1.31	1.56			
Create ideas for their writing	3.10	2.21	2.63	.0005	n.s.	n.s.
Standard Deviation	1.59	1.51	1.35			
Retrieve material from their memories to write	3.79	2.66	3.85	.0001	n.s.	.0002
Standard Deviation	1.72	1.55	1.63			
Plan writing processes, using effective writing strategies and techniques	2.88	2.00	2.50	.0002	n.s.	.0278
Standard Deviation	1.51	1.15	1.24			
Clarify their policy and position before writing	2.81	3.69	2.43	.0076	n.s.	.0001
Standard Deviation	1.83	2.40	1.36			
Locate and present adequate supporting material	2.07	1.61	2.03	.0044	n.s.	.0230
Standard Deviation	1.02	.911	1.00			
Focus and then narrow their plan by recognizing the rhetorical problem(s) they wish to solve	3.28	2.44	3.03	.0008	n.s.	.0137
Standard Deviation	1.56	1.44	1.20			
SKILLS — ROUND 2						
Analyze their own experiences to provide ideas for their writing	3.19	2.61	2.80	.0040	n.s.	n.s.
Standard Deviation	1.03	1.15	1.03			
Create ideas for their writing	3.05	2.49	3.07	.0062	n.s.	.0146
Standard Deviation	1.11	1.01	1.11			
Retrieve material from their memories to write	3.23	2.81	3.40	.0496	n.s.	.0275
Standard Deviation	1.13	1.24	1.25			

continued on next page

Table 10b. Continued

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
Plan writing processes, using effective writing strategies and techniques	2.28	1.81	2.33	.0013	n.s.	.0065
Standard Deviation	.78	.71	.92			
Clarify their policy and position before writing	2.67	3.30	2.76	.0090	n.s.	n.s.
Standard Deviation	1.08	1.69	1.27			
Locate and present adequate supporting material	2.05	1.66	2.10	.0018	n.s.	.0399
Standard Deviation	.69	.57	1.08			
Focus and then narrow their plan by recognizing the rhetorical problem(s) they wish to solve	3.05	2.54	3.07	.0040	n.s.	.0321
Standard Deviation	.90	1.04	1.16			

EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant

"to analyze and write about one's own experiences is to understand it better" and "persons who do not [have this skill] cannot relate to the experiences of others." Faculty also emphasize that "a necessary first step to the more detached critical modes [is] a need to understand our own conceptual frameworks first," and "students need to see the value in reflecting and preparing to write and the role of thinking as a vital part of writing." "All learning is experiential, if they can't analyze their experience, they can't analyze" stresses another professor. "How else do you synthesize language and experience to say something useful" questions a faculty member. However, some professors disagree. As one instructor comments "our emphasis is on teaching students to analyze other people's writing." "There is often little carryover from personal experiences to professional contexts for writing" remarks a professor.

Employers believed that analyzing one's own experience to provide ideas for writing is not critical within their organizational contexts, and they rated it lower than did the faculty. This skill is "not as important because most experiences are learned on the job" notes an employer. Another individual states "since their experience is limited, they need to look well beyond themselves." In another company, "reports and writing are reviewed [since] prior experience may not exist in areas they write about" states a supervisor.

Faculty believed that college graduates should be able to create ideas for their writing especially if a goal is to prepare future leaders in our society. They rated this skill significantly

higher than did employers and policymakers. Faculty valued "originality" and the generation of new ideas. These skills were critical for academic success according to faculty. They stated "generating ideas is central to most, if not all, writing tasks," "writing should be, in part, self-expression," this is "at the heart of what writing is all about," "brainstorming is important in the pre-writing stage," and "creative thoughts are not just for artists and philosophers. They [college graduates] need to learn the generative capacities of their own language." However, a skeptical professor states "create? If you can understand and use an idea, that's the most that can be hoped for [from college graduates]."

Both employers and policymakers did not share the faculty values. They were troubled by the word "create" in this skill. They believed that creativity is not necessary for some jobs and that some college graduates are not capable of generating new ideas. As a policymaker notes "some people are just not creative and/or their memories are not fountains of pertinence." Another administrator states "the ideas are usually given to the neophyte who must write, i.e. flesh out and discuss the idea." A faculty member notes the differences in organizational contexts and states "these skills would be important only if graduates were engaged in jobs that required informed autobiographical writing, surely a small percentage would fit into this situation."

Faculty members rated the ability to retrieve material from memories to write significantly higher than did employers and policymakers. This was another skill that professors value and hope college graduates achieve. As a composition professor comments, this skill is "common in early composition classes [but I am] not sure it is useful later." Another professor concurs and states college graduates "should and can do [this] in class, [but] it is harder to learn on the job. A writer's memory is important to effective writing." "Students need to trust 'invention' capacities in addition to finding authorities as sources" and "memory is what allows synthesis" states the faculty. Another professor laments "often we have no precedents in memory for the fast-paced worlds in which we write."

Both employers and policymakers rated lower the use of memories in writing compared to the faculty ratings. As a policymaker notes "although important in some areas, most policy writing does not require graduates to retrieve material from their own memories. Policy writing demands [an] ability to abstract, integrate and conceptualize well." An employer shares a similar view and stresses "technical papers are written from facts—verifiable facts." "Memory is but one source" and "it depends on the type of writing being done. Memory is not required for some writing" according to several policymakers. Another policymaker comments "memory would be involved in pre-writing for brainstorming purposes. [However,] cooperative groups could enter here in place of individual memory."

Similar disagreements arise relative to whether college graduates should be able to plan writing processes using effective writing strategies and techniques. Faculty rated this skill significantly higher than did employers and policymakers. Employers tended to not offer reasons for their different perceptions on this item. One reason for this lack of comments is that this item may reflect academic concerns which is an area that faculty can readily identify as being extremely important. Faculty members comment "knowing how to plan writing is a

kind of problem-solving skill that can be applied to multiple purposes," "without planning, even the best ideas go nowhere," and "knowing one's writing process ensures greater success because one can then allot the needed *time* to each stage of the process. Without this knowledge, planning and revising is apt to be incomplete, resulting in poor communication." Another faculty member cautions "plan by all means, but be flexible for the organization of writing." A faculty member believes that this skill is "more pertinent than sensitivity to the audience." Another professor remarks "I do teach that this is essential. Graduates ought to be equipped with a variety of strategies and techniques to choose from to suit any future writing purpose." However, two professors disagree and note "planning is probably less important than being able to *do*" and "this is too canned and formulaic." Several policymakers are concerned that this particular skill can't be expected from college graduates who lack work experience. Only through experiences in their occupations can college graduates acquire the maturity necessary to fully develop this particular skill according to these administrators.

Faculty believe it is extremely important for college graduates to locate and present adequate supporting material. They rated this skill significantly higher than employers and policymakers. Again, employers offered few comments to support their different perceptions. Faculty emphasized this skill is particularly important in developing persuasive or argumentative discourse and in trying to persuade others of different viewpoints. Faculty comment "I don't see how any writing is meaningful without evidence. Mere generalizations are simply not enough," and this is a "key to a good essay." Policymakers and faculty noted that this is a skill where current college graduates are weak. "Too few students understand evidence and how to use it" states a professor.

Significant differences emerged relative to college graduates' abilities to focus and then narrow their plan by recognizing the rhetorical problem(s) they wish to solve. Faculty rated this skill significantly higher than did employers and policymakers. This particular survey item was recommended by several writing faculty advisory board members. However, some employers and policymakers in the study did not understand the term "rhetorical problem."

Faculty tended to perceive this skill as basic while policymakers viewed it as too advanced a skill for college graduates to achieve. This skill is "essential for any writing task to be successful" states a faculty member. Another professor believes it is a "continuation of 'planning' and just as important." Policymakers remark "this is rather difficult for a young person" and "much too advanced a skill... [College graduates] need maturity/experience and further education" in order to achieve this skill.

The ability of college graduates to clarify their policy and position before writing generated the largest number of comments from the respondent groups. Employers rated this skill significantly higher than did the faculty. Some faculty believed that this clarification occurs while students write and revise their papers, and they objected to the need to do this before the writing begins. However, other faculty believed it is extremely important to clarify one's position before writing. "Basic policy and position must be defined as a precondition for any kind of writing in context" states a professor. This skill "in technical writing is very important"

comments another faculty member. A faculty member remarks "although it is true that writers discover meaning as they write, it's also true that they need a clear sense of direction before they begin drafting." An employer concurs and comments "before you start writing, you must know what your purpose is." Another employer offers a practical example that "often times [when] requesting additional funding [you] need to specify reasons." Policymakers stress "clarity of thought is essential, not only about the topic but about what the graduates thinks about the topic. The writer's attitude will be reflected in the work," and it is "difficult to write clearly without doing so."

Some faculty disagree. They remark "clarification can wait for revision"; "it is only through writing that one can achieve clarity of thought," "there is seldom a need to do so *before* writing." Another professor strongly concludes "this is exactly what students are too often taught to do, and this practice both forestalls beginning to write and produces shallow, perfunctory writing that is short on thinking. Students need to write and revise in order to discover their policy or position."

In pre-writing activities, there were many disagreements about the importance of certain skills including analyzing experiences to provide ideas, creating ideas for writing, retrieving material from memory, planning writing processes, clarifying position and policy before writing, locating and presenting supporting material, and recognizing rhetorical problems and then focusing and narrowing the writing plan. The respondent groups agreed only that three skills were important. College graduates' abilities to research their subject was rated the most important in this section followed by the ability to identify problems to be solved, and to discuss a piece of writing with someone to clarify what to say.

A.iv. Organizing

An important skill cited in many studies (Anderson, 1985; Cullen et al., 1987; Davis & Stohrer, 1989; Faigley et al., 1981; Goswami et al., 1981; Haswell, 1984; Loacker et al., 1984; Storms, 1983; White & Polin, 1986; and Witte et al., 1982) is the ability to clearly organize and structure a document. Haswell (1984) concluded that the essays of upper-division college students provided more evidence of logical organization of ideas and had clearer connections between paragraphs than lower division students. Furthermore, White's and Polin's (1986) survey of the California State University instructors indicated that the ability "to select, organize, and present details to support a controlling idea" was important as well as the ability to "use appropriate organization and paragraphing." The establishment of an order for the writing task involves the consideration of the needs of the subject matter and the potential readers especially for the more experienced writers (Faigley et al., 1985).

There were 18 different items in this section of the survey. From the first round of responses, there was a consensus on six of these items (see Table 11a). These areas included the ability to organize material for more than one audience; include clear statements of the main ideas; demonstrate methods of organization to audience(s) by using informative headings; write

Table 11a. Analysis of Variance — Organizing

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Organize the material for more than one audience	3.34	1.86	2.56	.4857
Include clear statements of the main ideas	1.67	2.09	.99	.1246
Demonstrate their method of organization to their audience(s) by using informative headings	3.50	4.90	3.39	.2386
Write informative headings that match their audiences' questions	4.01	5.42	3.35	.2000
Maintain coherence within sentences	1.57	1.38	.60	.1014
Maintain coherence among sentences, paragraphs, and sections of a piece of writing	1.59	1.68	.67	.0826
Develop patterns of organization for their ideas	1.88	3.15	1.00	.0453*
Use knowledge of their subject matter to shape a text	2.16	8.26	1.00	.0004*
Use knowledge of potential audience expectations and values to shape a text	2.52	11.43	1.65	.0012*
Create and use an organizational plan	2.90	8.26	3.07	.0700*
Select, organize, and present details to support a main idea	1.71	10.98	0.98	.0001*
Organize their writing in order to emphasize the most important ideas and information within sentences and larger units such as paragraphs.	1.86	4.47	1.08	.0174*
Cluster similar ideas	2.40	9.75	1.81	.0052*
Provide a context for the document in the introduction	2.62	13.48	2.20	.0026*
Maintain connections that link key points in an argument with multiple points	2.02	8.89	1.53	.0035*
Set up signposts such as tables of contents, indexes, and side tabs	4.16	12.02	3.87	.0467*
Demonstrate patterns of reasoning in their writing	2.19	14.86	1.78	.0003*

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Table 11a. Continued

	Mean	Mean Square Model	Mean Square Error	Pr > F
Move between more abstract and more specific levels of argument	2.49	50.82	1.85	.0001*
SKILLS — ROUND 2				
Develop patterns of organization for their ideas	1.95	.49	.51	.3856
Use knowledge of potential audience expectations and values to shape a text	2.69	2.01	.95	.1250
Create and use an organizational plan	2.66	.10	1.29	.9236
Organize their writing in order to emphasize the most important ideas and information within sentences and larger units such as paragraphs.	1.92	.86	.41	.1284
Cluster similar ideas	2.08	.94	.55	.1866
Provide a context for the document in the introduction	2.42	1.79	.86	.1292
Set up signposts such as tables of contents, indexes, and side tabs	4.19	1.08	2.02	.5865
Demonstrate patterns of reasoning in their writing	2.16	.39	.88	.6457
Use knowledge of their subject matter to shape a text	2.08	3.18	0.60	.0060*
Select, organize, and present details to support a main idea	1.75	2.00	0.38	.0059*
Maintain connections that link key points in an argument with multiple points	2.01	4.58	0.50	.0002*
Move between more abstract and more specific levels of argument	2.75	10.41	1.19	.0002*
* Significant differences noted in TUKEY and Least Square Means				

informative headings that match audiences' questions; maintain coherence within sentences; and maintain coherence among sentences, paragraphs, and sections of a piece of writing.

By the second round of surveys, the three respondent groups reached an agreement about the importance of an additional eight skills for a total of 14 items (see Table 11a). The three respondent groups agreed that college graduates should be able to develop patterns of organization for their ideas; use knowledge of potential audience expectations and values to shape a text; create and use an organizational plan; organize writing in order to emphasize the most important ideas and information within sentences and in larger units such as paragraphs; cluster similar ideas; provide a context for the document in the introduction; set up signposts such as table of contents, indexes, and side tabs; and demonstrate patterns of reasoning in their writing.

After the second round of surveys, respondents disagreed about the importance of four skills (see Table 11b). In all cases, the faculty rated these skills significantly higher than did either employers or policymakers. Faculty believed that college graduates should use the knowledge of their subject matter to shape a text. In general, faculty comment that "knowledge of a subject is vital to writing cogently," "essential goal of instruction in higher education," "a precondition for successful writing," and "ideally [this is a goal] but most of us have trouble doing that." Policymakers disagreed with this viewpoint. They state this "may not be a needed source of knowledge," "while important, this is not the prime factor," and "this is more than many college graduates know." Employers tended to concur with these policymaker views. As one employer notes "we have a number of entry-level staff members who must do this independently, prior to a final review. We could not spend the time with each person helping in these areas."

Another skill where faculty significantly disagreed with the other two respondent groups was the importance of college graduates' abilities to select, organize, and present details to support a main idea. Faculty state "college teachers of writing rate this at the top of the list, even when they don't agree on other writing matters," "this is evidence of critical thinking abilities," "heart of coherence in an essay," and "no main idea is convincing without effective details, unless the main idea was self-evident in the first place." Some employers and policymakers viewed this skill as more applicable to writers who write longer documents which are often not necessary in the workplace. As an employer notes "these infer rather long written communications, sometimes the best communications are short, succinct statements." A policymaker places an emphasis on the key word 'select' and stresses that "too many details spoil the broth." Faculty believe this is a critical skill while others question whether college graduates need this skill for the workplace.

Faculty rated significantly higher than did employers and policymakers the ability to maintain connections that link key points in an argument with multiple points. A professor states "connecting central points with others is important to the development and persuasiveness of writing. However, some faculty disagree. As one professor comments "this while important, is less so, only if they're attempting graduate school would they really need this in-depth." Policymakers and employers believe this skill is too advanced for college graduates.

Table 11b. Disagreements about Organizing Activities Between Respondent Groups

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Develop patterns of organization for their ideas	2.07	1.73	2.08	.0303	n.s.	n.s.
Standard Deviation	.95	.99	1.09			
Use knowledge of their subject matter to shape a text	2.47	1.92	2.48	.0011	n.s.	.0051
Standard Deviation	1.06	.94	1.09			
Use knowledge of potential audience expectations and values to shape a text	2.86	2.23	2.90	.0051	n.s.	.0103
Standard Deviation	1.49	1.10	1.46			
Create and use an organizational plan	2.78	3.11	2.40	n.s.	n.s.	.0115
Standard Deviation	1.64	1.90	1.37			
Select, organize, and present details to support a main idea	2.16	1.44	1.90	.0003	n.s.	.0089
Standard Deviation	1.35	.77	.98			
Organize their writing in order to emphasize the most important ideas and information within sentences and larger units such as paragraphs	2.19	1.71	1.85	.0059	n.s.	n.s.
Standard Deviation	1.08	1.02	1.05			
Cluster similar ideas	2.60	1.98	2.53	.0065	n.s.	.0247
Standard Deviation	1.47	1.29	1.32			
Provide a context for the document in the introduction	3.19	2.37	2.55	.0005	0.0398	n.s.
Standard Deviation	1.42	1.50	1.53			

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Employers and policymakers rated significantly lower than did faculty the ability to move between more abstract and more specific levels of argument. A professor notes "abstraction without specifics often baffles an audience. All specifics and no ability to synthesize leaves an audience guessing." Again, some employers and policymakers believe this skill may be too advanced for college graduates.

Table 11b. Continued

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
Maintain connections that link key points in an argument with multiple points	2.48	1.81	1.98	.0030	0.0464	n.s.
Standard Deviation	1.47	1.18	1.02			
Set up signposts such as tables of contents, indexes, and side tabs	4.02	4.41	3.55	n.s.	n.s.	.0208
Standard Deviation	1.99	1.94	2.02			
Demonstrate patterns of reasoning in their writing	2.74	1.89	2.33	.0005	n.s.	.0330
Standard Deviation	1.58	1.29	1.05			
Move between more abstract and more specific levels of argument	3.47	1.91	2.85	.0001	0.0511	.0003
Standard Deviation	1.69	1.16	1.41			
SKILLS — ROUND 2						
Use knowledge of their subject matter to shape a text	2.26	1.92	2.37	.0290	n.s.	.0351
Standard Deviation	.90	.60	1.07			
Select, organize, and present details to support a main idea	1.86	1.62	2.00	.0361	n.s.	.0246
Standard Deviation	.64	.53	.83			
Maintain connections that link key points in an argument with multiple points	2.30	1.81	2.23	.0007	n.s.	.0336
Standard Deviation	.83	.53	1.01			
Move between more abstract and more specific levels of an argument	3.26	1.67	2.97	.0004	n.s.	.0123
Standard Deviation	1.20	1.10	.89			

EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant

The three respondent groups agreed about the importance of 14 different skills. The ability to maintain coherence within and among sentences, paragraphs, and sections of a piece of writing as well as the inclusion of clear statements about main ideas were rated as the most important skills. The ability to set up signposts and write informative headings that match audience's questions were rated medium importance. There were four skills that faculty consistently rated of higher importance than did the employers or policymakers. These areas

included linking key points in an argument; moving between abstract and specific levels of argument; selecting, organizing, and presenting details to support a main idea; and using knowledge of subject matter to shape a text.

A.v. Drafting

Most writers complete a first draft of their written work. Flower and Hayes (1985), as well as Faigley et al. (1985) note that the actual process of drafting by skilled writers involves the generation of ideas based on goals involving the relationship between the reader and the writer. Less-skilled writers are more likely to generate ideas using simple remembered facts about the topic.

In this section of the survey, the three respondent groups reached a consensus on five items after the initial round of feedback (see Table 12a). These abilities included avoiding common grammatical errors of standard written English, quoting accurately, establishing and maintaining a focus, writing effective introductions and conclusions, and writing effectively under pressure and meeting deadlines.

They also rated lower than did faculty the skill of refining the notion of audience(s) as they write. Faculty remarked "audience analysis is critical to success;" "for anything more complicated than filling in forms, this is essential;" "not considering audience and purpose lessens the probability that the intended message will be received;" "globalization and diversity requires this skill;" "audience is the most important context for any form of communication," "an inauthentic voice can undermine writing;" and "a clear and defined persona provides context and an orientation for a reader." However, some policymakers and employers object to the emphasis on the audience and believe that content needs to be stressed more than anything else. Others think this skill can only be developed in mature writers who have gained experience in their work setting. Some employers believe this skill should only occur once and that no re-work be involved in writing. They also believe that entry level employees should not be expected to possess these skills. Even some faculty disagree. As one professor notes "I resent the notion that a writer is like an actor, always adapting him/herself to a myriad of environments." "Choice implies a degree of mastery, 'consider' doesn't. Mastery is a good goal, but can be inhibiting and is in any case an unreachable ideal. How can any of us 'choose' the voice we write in?" and "Is audience awareness even taught? Do college graduates really write to differing ones?" question two professors.

Faculty, employers, and policymakers disagreed about eight specific skills (see Table 12b). However, after the second round of surveys, participants agreed about three additional items including the ability to make general and specific revisions; to move between reading and revising of their drafts to emphasize key points; and to refine notion of audience while writing. This meant there were five items remaining where disagreements still existed (see Table 12b). Again, in most cases the faculty rated these skills significantly higher than did employers or the policymakers. There were no significant differences in the ratings between employers and policymakers.

Table 12a. Analysis of Variance — Drafting

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Avoid common grammatical errors of standard written English	1.60	1.56	1.01	.2170
Quote accurately	1.56	2.18	1.20	.1642
Establish and maintain a focus	1.51	1.33	.55	.0916
Write effective introductions and conclusions	1.83	1.01	1.29	.4632
Write effectively under pressure and meet deadlines	2.41	.75	1.90	.6733
Write drafts of their work	1.84	17.69	1.27	.0001*
Make genera' and specific revisions while they write their drafts	2.12	20.74	1.94	.0001*
Develop paragraphs	1.63	7.18	1.12	.0020*
Move between reading and revising of their drafts to emphasize key points	2.10	9.04	2.01	.0122*
Develop their chosen topic	1.57	10.47	0.89	.0001*
Refine goals as they write	2.16	26.92	1.44	.0001*
Refine the notion of audience(s) as they write	2.73	24.04	2.08	.0001*
Consider audience and purpose to shape their voice, choose a voice to write in, and choose language, sentence structure and content to create that voice	2.43	12.06	2.34	.0065*
SKILLS — ROUND 2				
Make general and specific revisions while they write their drafts	2.20	1.62	1.45	.3307
Move between reading and revising of their drafts to emphasize key points	2.12	1.40	.73	.1479
Refine the notion of audience(s) as they write	3.08	2.96	1.53	.1472
Write drafts of their work	1.86	3.29	0.61	.0053*

continued on next page

Table 12a. Continued

	Mean	Mean Square Model	Mean Square Error	Pr > F
Develop paragraphs	1.73	1.85	0.44	.0158*
Develop their chosen topic	1.76	1.55	0.45	.0333*
Refine goals as they write	2.05	3.69	0.74	.0078*
Consider audience and purpose to shape their voice, choose a voice to write in, and choose language, sentence structure and content to create that voice	2.59	5.75	1.47	.0216*
* Significant differences noted in TUKEY and Least Square Means				

Faculty believed that it was extremely important for college graduates to write drafts of their work. They remark "drafting is important because it helps develop more complex thinking," "people attend college to learn and develop these basic skills" and [this skill] "is extremely important because it implies that the writer embraces revision." Another professor comments, "I'm very much convinced of the usefulness of the 'process approach'— teaching students to draft and revise is essential."

Employers and policymakers rated this skill significantly lower than did faculty. One employer states that his employees usually write a narrative directly from their own notes. These two respondent groups believe college graduates may not need to write several versions of their work. Other respondents including some faculty imply that the need to write several drafts is associated with students who have weaker writing skills. As one professor stresses "some students learn to write well with minimal revision—more of a focus for weak students." "Some people don't need several drafts" states a policymaker. A faculty member suggests students "should be able to recognize when a draft is helpful and when it is not." Another policymaker comments "drafts are initial in collaborative work settings, and they often have to be done quickly." This particular statement may capture part of the reason for differences regarding this skill. In college, students usually have many opportunities to write and create different drafts. However, once they enter the workforce, time constraints or company schedules may impose upon employees a real demand to accomplish writing quickly with little opportunity for the generation of multiple draft versions. However, the faculty themselves disagree about the importance of this skill.

Faculty rated significantly higher than did policymakers the ability of college graduates to develop paragraphs. Most faculty believe these are fundamental skills. They state "development as long as it is not empty amplification is essential," "draft paragraphs may

Table 12b. Disagreements about Drafting Activities Between Respondent Groups

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Write drafts of their work	2.38	1.49	2.13	.0001	n.s.	.0150
Standard Deviation	1.18	.94	1.50			
Make general and specific revisions while they write their drafts	2.71	1.74	2.43	.0001	n.s.	.0280
Standard Deviation	1.27	1.31	1.77			
Develop paragraphs	1.90	1.41	1.95	.0029	n.s.	.0379
Standard Deviation	1.07	.85	1.53			
Move between reading and revising of their drafts to emphasize key points	2.50	1.85	2.28	.0053	n.s.	n.s.
Standard Deviation	1.49	1.29	1.67			
Develop their chosen topic	2.07	1.34	1.53	.0004	.0167	n.s.
Standard Deviation	1.41	.67	.78			
Refine goals as they write	2.88	1.74	2.43	.0001	n.s.	.0037
Standard Deviation	1.55	.95	1.32			
Refine the notion of audience(s) as they write	3.37	2.33	3.08	.0002	n.s.	.0029
Standard Deviation	1.79	1.29	1.32			
Consider audience and purpose to shape their voice, choose a voice to write in, and choose language, sentence structure and content to create that voice	2.83	2.14	2.77	.0128	n.s.	.0173
Standard Deviation	1.83	1.41	1.40			
SKILLS — ROUND 2						
Write drafts of their work	2.09	1.69	2.07	.0082	n.s.	.0474
Standard Deviation	.87	.68	.94			
Develop paragraphs	1.74	1.63	2.03	n.s.	n.s.	.0119
Standard Deviation	.73	.59	.76			
Develop their chosen topic	1.95	1.65	1.87	.0389	n.s.	n.s.
Standard Deviation	.84	.61	.57			

continued on next page

Table 12b. Continued

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
Refine goals as they write	2.40	1.90	2.03	.0241	n.s.	n.s.
Standard Deviation	1.33	.64	.61			
Consider audience and purpose to shape their voice, choose a voice to write in, and choose language, sentence structure and content to create that voice	2.84	2.38	2.97	n.s.	n.s.	.0194
Standard Deviation	1.43	1.11	1.19			

EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant

change, but even in drafting they signal new ideas," "necessary to show control of an organized unit," and "the audience needs a sense of unity or coherence through paraphrasing." One professor describes the impact of technology and how it has affected writing for his students. "This [skill is a] basic step for producing a comprehensive and finished piece of writing. It needs to be stressed now more than ever because students are composing and editing solely on the word-processor, which seriously degrades organization and logic. I require undergraduate and graduate students to provide an edited draft with their papers, so that they cannot avoid editing a hard-copy text."

Faculty rated the importance of developing a chosen topic and refining goals significantly higher than did employers. Again, they made similar comments and illustrations as they did for the skill of developing paragraphs. A faculty member states "if they can't develop a topic, there's nothing to revise." The development of a topic is the "key writing task, especially in a collaborative work setting" according to a policymaker. In support of the importance of refining goals, faculty wrote "this is the bottom line in the writing process" and "awareness of the process itself is a means to refine thinking and writing." However, an employer noted this skill is "less important than the content."

Policymakers rated significantly lower than did faculty the importance of college graduates' abilities to consider audience and purpose to shape their voice, choose a voice to write in, and choose language, sentence structure and content to create that voice.

There was also a difference between faculty and employers concerning the skill of defining goals as they write. Faculty rated this skill significantly more important than did employers. There was no significant difference detected between faculty and policymakers.

In this section, the respondents agreed about the importance of eight drafting skills. They rated the ability to establish and maintain a focus, to quote effectively, and to avoid common grammatical errors of standard written English as extremely important skills. However, they disagreed about six skills with faculty consistently rating these skills significantly higher in importance than the other respondent groups.

A.vi. Collaborating

The ability of college graduates to write collaboratively is advocated by a number of writing experts (Anderson, 1985; Barclay et al., 1991; White, 1991; and Witte, 1992). The specific results from Anderson's surveys indicated that writers should be able to co-author written material, delegate writing to others, critique others' drafts, and seek draft critiques from others. White states that these skills are particularly important in the business world. For example, sometimes several experts contribute particular sections to a major report based upon their own individual area of expertise. In another case, a superior may copyedit the written work of a subordinate.

The three respondent groups agreed about the importance of one skill in this area. College graduates should be able to collaborate with others during reading and writing in a given situation (see Table 13a). In the remaining three more specific items regarding collaboration, there were disagreements about their importance that cut across the respondent groups (see Table 13b). No additional consensus was reached after the second round of surveys.

Policymakers and employers rated significantly higher than did faculty the skill of writing documents for another's signature. The reality of the employers' and policymakers' environment requires this skill of college graduates. They note "this is what entry-level people often must do—and do so without embarrassment to the 'signer'," "this is done quite frequently in business," "as a director, I need this type of help from staff who are responsible for various aspects of the organization," "if one is interested in moving ahead [they need this skill]," "this is more important than 'group' writing in our organization," and "the most important documents tend to be signed by senior officers." Faculty disagree and tend to regard this skill as trivial and not relevant for college graduates. They remark "ghostwriting is a narrow specialization; not all need to learn," "seems dishonest," "they ought to be writing for their own signature," and "sounds like a specific skill for a secretarial course." Another professor concludes "most writers would find this work unfulfilling. I still emphasize that the writer must do his/her own work."

Faculty rated significantly more important the ability of college graduates to critique other's drafts and the ability to negotiate critiques of writing from others than did the employers and policymakers. The faculty wrote numerous comments supporting the importance of this skill. They said "I believe in the power of peer revision," "[this is a] terrific strategy to help students become more conscious of audience, purpose, voice, and organization," "this seems difficult for many students to do, unfortunately. To be able to critique others' drafts, the writer must

Table 13a. Analysis of Variance — Collaborating

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Collaborate with others during reading and writing in a given situation	2.82	3.26	2.94	.3325
Critique others' drafts	2.77	19.10	1.93	.0001*
Negotiate critiques of their writing from others	2.86	14.05	2.77	.0071*
Write documents for someone else's signature	4.22	55.23	5.37	.0001*
SKILLS — ROUND 2				
Critique others' drafts	2.67	11.20	1.11	.0001*
Negotiate critiques of their writing from others	2.83	9.46	1.56	.0029*
Write documents for someone else's signature	4.25	21.00	3.43	.0027*
* Significant differences noted in TUKEY and Least Square Means				

respond as writer and audience, so the learning process is taken further. Negotiating critiques allows the writer to see that writing is a 'product' and so possibly removes oneself from the personal vulnerability," "reading and writing are interdependent activities, and development occurs through peer critique of writing," "this improves sense of audience and revision," "if students cannot critique another's draft, they will scarcely be aware enough to edit their own work effectively. Critiquing others' work is excellent training," and "I believe in the power of peer revision and critical thinking skills." However, some faculty and members of the other respondent groups disagree. A professor remarks "[this skill] is not as important as writing on their own well." Other faculty believe this skill is not important for everyone. In some work environments collaboration is less important. As an employer notes "in our organization there is very little 'group' writing. Employees are expected to excel on their own."

All three respondent groups agreed that college graduates should be able to collaborate with others during reading and writing in a given situation. They disagreed about the importance of three specific collaborative skills. In two cases, faculty rated the skills significantly more important than did employers and policymakers. However, both employers and policymakers rated the ability to write documents for another's signature as more important than did the faculty.

Table 13b. Disagreements about Collaborating Activities

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Critique others' drafts	3.43	2.45	2.80	.0001	.0198	n.s.
Standard Deviation	1.39	1.44	1.22			
Negotiate critiques of their writing from others	3.41	2.57	2.95	.0011	n.s.	n.s.
Standard Deviation	1.51	1.71	1.74			
Write documents for someone else's signature	3.28	4.84	3.68	.0001	n.s.	.0066
Standard Deviation	1.87	2.53	2.20			
SKILLS — ROUND 2						
Critique others' drafts	3.16	2.37	2.97	.0002	n.s.	.0030
Standard Deviation	1.15	.06	.89			
Negotiate critiques of their writing from others	3.23	2.55	3.20	.0042	n.s.	.0109
Standard Deviation	1.27	1.27	1.16			
Write documents for someone else's signature	3.58	4.67	3.83	.0009	n.s.	.0103
Standard Deviation	1.58	2.08	1.31			

EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant

A.vii. Revising

Researchers have discovered that high school and college writers in general do not know how to revise effectively (Faigley et al., 1985). Several studies have attempted to define what constitute these effective abilities. The more experienced writers tend to make changes that affect the structure and content of a text more than inexperienced writers (Beach 1976; Sommers, 1978, 1980). College freshmen tend to view their first drafts as conceptually complete and believe there is only a need for mechanical corrections. Other researchers have found a predominance of mechanical and word-level revisions among inexperienced writers (Bridwell, 1980; Perl, 1980; Pianko, 1977, 1979a, 1979b; Stallard, 1974). More experienced

writers described their primary objective as finding the form, shape, structure, or design of their argument, while the novice writers concentrated more on changing words as words, divorced from their role in the text. The more mature writers were also more concerned about their audience, and their imagined reader influenced their process of revision by functioning as a critic. The novice writers were more concerned about following abstract learned rules about texts, such as standard, inflexible organizational structures for essays and paragraphs. The more experienced writers "sought to discover or create meaning" through revision, while the novice writers "sought to bring their writing into congruence with a pre-defined meaning." Finally, the more experienced writers often viewed revision as a process with different levels of attention and different agenda for each stage. For example, the more experienced writers often separated the content-related revision of their documents from the grammatical and mechanical copyediting. Studies by Flower and Hayes (1985), Schriver (1992), and Wallace and Hayes (1991) indicate the importance of global, large-scale revision to successful writing. However, local, small-scale revision and editing are not to be overlooked. These are equally important abilities according to writing experts (Brand, 1991; Greenburg, 1988; Loacker et al., 1984; Schriver, 1992; Wallace & Hayes, 1991; and White, 1991).

All three respondent groups agreed that four skills were extremely important for college graduates to attain. They should correct grammar problems; revise to improve word choice; select, add, substitute, or delete information for a specified audience; and reduce awkward phrasing and vague language (see Table 14a). They disagreed about the importance of three skills including the ability to add transitions as needed, diagnose and correct problems with text (including matters of organization, focus, content, development, and coherence), and assess writing and revise it (see Table 14b). Faculty rated these three skills significantly higher than did employers and policymakers. No additional consensus was reached about revising after the second round of surveys.

The ability to assess writing and revise it as well as the ability to diagnose and correct problems with the text received the strongest support from faculty. They remarked "writing is revision and revision entails being a critical reader of one's own writing" and "teaching students to be their own editors is one of my primary goals. This is what distinguishes 'fine' from 'average' writers." Some faculty note the difficulty of teaching students this particular skill. As one professor states "[this is] most critical and a difficult step to develop, but once learned it informs much of everything they do." Faculty also believe that adding transitions is extremely important. They note "transitions are essential to flow, logical organization, and reader-based writing" and that "ideally the transition should be in the original drafts." However, employers and policymakers rated these skills as less important. They believe that not all graduates need revision skills. Furthermore, in many company and policy units, there is not an opportunity or the time to revise written documents. In this section, the ability to correct grammar problems was rated the most important followed by the ability to reduce awkward phrasing and vague language. Furthermore, all of three groups agreed that revising to improve word choice and selecting, adding, substitutions, or deleting information for a specified audience are critical skills.

Table 14a. Analysis of Variance — Revising

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILL—ROUND 1				
Correct grammar problems	1.55	.13	.66	.8223
Revise to improve word choice	1.92	1.66	1.10	.2232
Select, add, substitute, or delete information for a specified audience	2.30	1.05	1.54	.5075
Reduce awkward phrasing and vague language	1.89	1.22	.88	.2508
Assess their own writing and revise it	1.64	14.42	.71	.0001*
Diagnose and correct problems with the text, including matters of organization, focus, content, development, and coherence	1.73	8.41	.74	.0001*
Add transitions between parts of the text as needed	2.19	21.51	1.35	.0001*
SKILLS — ROUND 2				
Assess their own writing and revise it	1.81	7.28	.58	.0001*
Diagnose and correct problems with the text, including matters of organization, focus, content, development, and coherence	1.84	6.64	.63	.0001*
Add transitions between parts of the text as needed	2.04	5.42	.74	.0009*
* Significant differences noted in TUKEY and Least Square Means				

A.viii. Features of Written Products

Many studies, especially those that involve surveys and large-scale assessments of written texts themselves, indicate specific, detailed features of texts that illustrate writing ability. Cullen et al. (1987) found the critical skills to be the "main point is clearly stated or implied," "essay is grammatically error-free," "essay demonstrates effective use of sentence variety," and "essay demonstrates precise and sophisticated word choice, appropriate to the level of style." Clarity, conciseness, organization, and grammar were cited as important skills by respondents in several surveys (Barman & Fischer, 1984; Bennett & Olney, 1986; Stihe & Skarzenski,

Table 14b. Disagreements about Revising

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS - ROUND 1						
Assess their own writing and revise it	2.12	1.33	1.93	.0001	n.s.	.0016
Standard Deviation	.99	.66	1.07			
Diagnose and correct problems with the text, including matters of organization, focus, content, development, and coherence	2.10	1.49	1.93	.0001	n.s.	.0100
Standard Deviation	1.00	.75	.94			
Add transitions between parts of the text as needed	2.66	1.80	2.73	.0001	n.s.	.0002
Standard Deviation	1.26	1.05	1.34			
SKILLS - ROUND 2						
Assess their own writing and revise it	2.16	1.56	2.13	.0010	n.s.	.0010
Standard Deviation	1.07	.56	.82			
Diagnose and correct problems with the text, including matters of organization, focus, content, development, and coherence	2.07	1.60	2.27	.0041	n.s.	.0050
Standard Deviation	.96	.53	1.17			
Add transitions between parts of the text as needed	2.28	1.82	2.40	.0169	n.s.	.0033
Standard Deviation	1.12	.69	.93			

EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant

1979; and Storms, 1983). Business executives in Iowa cited the most frequent writing problems as wordiness, grammar, sentence structure, spelling, clarity, and organization (Stine & Skarzenski, 1979). Other studies (Haswell, 1984; White & Polin, 1986; and Witte et al., 1982) continue to add important dimensions of good written products that were incorporated into our survey.

Faculty, employers, and policymakers agreed that seven skills are important in this section of the survey (see Table 15a). The ability to use correct grammar, syntax, (word order), punctuation, and spelling was rated extremely important followed by the use of language that

Table 15a. Analysis of Variance — Features of Written Products

	Mean	Mean Square Model	Mean Square Error	PR > F
SKILL—ROUND 1				
Use active or passive voice where appropriate	2.65	3.85	2.22	.1792
Use language their audience understands	1.73	.25	1.12	.7084
Define or explain technical terms	2.00	1.36	1.01	.2633
Use concise language	1.83	.17	1.04	.8502
Use correct grammar, syntax (word order), punctuation, and spelling	1.50	.41	.77	.5911
Use correct reference forms	2.41	1.29	2.06	.5368
Use the specific language conventions of their academic discipline or professional area	2.77	4.91	2.56	.1496
Vary sentence length and style for rhetorical purposes	2.88	28.05	2.49	.0001*
Use visual aids, tables, and graphs	3.74	24.23	3.60	.0015*
SKILLS — ROUND 2				
Vary sentence length and style for rhetorical purposes	2.85	10.05	0.96	.0001*
Use visual aids, tables, and graphs	3.74	15.58	2.25	.0013*
* Significant differences noted in TUKEY and Least Square Means				

the audience understands, and use of concise language. The remaining three skills were rated with medium importance and included the ability to use active or passive voice where appropriate, define or explain technical terms, use correct reference forms, and use the specific language conventions of the academic discipline or professional arena. Faculty, employers, and policymakers continued to disagree in the second survey about the importance of the ability to vary sentence length and style, and the skill of using visual aids, tables, and graphs (see Table 15b).

Employers rated significantly higher than did faculty the need for college graduates to use supporting visual aids in their written products. They stress that this adds clarity to presentations and is critical for employees in the workplace. The supporting comments from

Table 15b. Disagreements about Features of Written Products

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Vary sentence length and style for rhetorical purposes	3.64	2.46	3.05	.0001	n.s.	.0252
Standard Deviation	1.76	1.54	1.38			
Use visual aids, tables, and graphs	3.17	4.15	3.28	.0008	n.s.	.0103
Standard Deviation	1.67	2.03	1.77			
SKILLS — ROUND 2						
Vary sentence length and style for rhetorical purposes	3.19	2.56	3.33	.0027	n.s.	.0001
Standard Deviation	1.16	.93	.84			
Use visual aids, tables, and graphs	3.07	4.07	3.57	.0005	n.s.	n.s.
Standard Deviation	1.47	1.58	1.22			
EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant						

employees describe the importance of this skill as follows: "backbone of the presentation"; "extremely important in the business world — sometimes the difference between good and great"; "modern communications require the use of these tools"; and "critical because this also implies that you know what your audience likes *and* you use it." Employers emphasized that this skill is gaining in importance especially because employees now use microcomputers in much of their daily work. They expect this skill to become increasingly important in the future. However, faculty disagree about the importance of this skill. Many faculty believe this skill is only important for business or technical writing courses. Other faculty expect that employers will train new hires to acquire this skill. They believe the use of visual aids is heavily dependent upon the particular context or discipline and that some students will never need this skill. The faculty tended to rate this skill lower because they did not view it as essential for all college graduates nor for all writing situations or tasks.

Faculty rated the ability to vary sentence length and style for rhetorical purposes as significantly more important than did both employers and policymakers. Faculty viewed this

skill as a mandatory requirement while the other respondent groups thought it was not essential. The faculty commented "this is one sign of sophisticated writing"; "variety demonstrates understanding and adds to interest"; and "fluidity occurs through learning different stylistic connections."

A.ix. Written Products

A study of writing skills at the college level must include not only how students write, but also what they should be able to write after completing their education. Faigley's 1981 survey of 200 college-graduate employees indicated that "the ability to use specific business and technical writing document forms" was one of the most important skills that should be taught in college writing courses. Storms (1983) surveyed 804 graduates of the college of business administration at Miami University of Ohio, who reported that they write memoranda, letters, short reports, step-by-step instructions or procedures, and proposals. In another study, senior executives reported that the most frequently used forms of business communication among some of the largest United States' corporations were memoranda, letters, analytical reports, and informational reports (Bennett and Olney, 1986). Anderson (1985), Faigley et al. (1981), and Storms (1983) found that the majority of college graduates in the workforce indicated that they write as many as seven or eight different types of letters, memoranda, and reports. These various types of written products were incorporated in our Delphi survey.

In this section of the survey, faculty, employers, and policymakers agreed that nine skills were important for college graduates to attain with a minimum amount of training in the workplace context. These included the ability to write memorandum, letters, formal reports, summaries of meetings, scripts for speeches/presentations, and complete pre-printed forms that require written responses. After the second round of surveys, they agreed that three additional skills were important (see Table 16a). College graduates should be able to write step-by-step instructions, journal articles, and policy statements. However, they disagreed about the importance of college graduates writing abstracts and evaluations (see Table 16b).

Faculty rated significantly higher than did employers and policymakers the need for college graduates to write abstracts. Faculty comment that this skill is "a very important skill, because the genre is very important—nobody reads the whole report," "a writer of good abstracts has learned to read effectively," "college graduates should be able to see the essential argument in someone's writing and sort it out from the less important," "summarizing and condensing are often necessary to cope with the information overload," and "writing abstracts trains writers to identify main points in their own writing and others' writing." Employers and policymakers believe this skill is too advanced for college graduates and that only supervisors or individuals in advanced managerial levels of the organization need this skill. Many believe this skill is not necessary for the entry level new employee.

Policymakers rated the ability to write evaluations as significantly less important than did faculty. "These skills are appropriate for anyone who wants to move up vocationally," and it

Table 16a. Analysis of Variance — Written Products

		Mean Square Model	Mean Square Mean	Pr > F Error
SKILL—ROUND 1				
Write memoranda	1.81	1.96	1.46	.2627
Write letters	1.66	.01	.98	.9918
Write formal reports	2.37	3.51	1.95	.1676
Write summaries of meetings	2.42	1.87	2.51	.4749
Write scripts for speeches/presentations	3.56	4.19	3.66	.3202
Complete pre-printed forms that require written responses	2.39	.10	3.19	.9678
Write step-by-step instructions	2.29	5.34	1.96	.0670*
Write journal articles	4.01	16.50	4.31	.0232*
Write abstracts	3.34	67.32	3.24	.0001*
Write policy statements	3.41	28.35	3.79	.0007*
Write evaluations	2.73	10.03	2.39	.0161*
SKILL—ROUND 2				
Write step-by-step instructions	2.31	2.24	.90	.0858
Write journal articles	4.41	1.74	2.14	.4437
Write policy statements	3.98	3.48	1.70	.1316
Write abstracts	3.78	9.01	1.58	.0040*
Write evaluations	3.02	3.74	1.34	.0637*
* Significant differences noted in TUKEY and Least Square Means				

"teaches clarification of criteria and ways those have been met" state faculty. Another professor remarks "College graduates from this four-year liberal arts institution should be able to have the writing skills necessary to perform these tasks at a high level of competence. That's why my grading is above the mean in all cases. Students are asked to do all these things in their classes." However, the other two respondent groups again stressed that the ability to write

Table 16b. Disagreements about Written Products Between Respondent Groups

	Means			Significance Level		
	EMP	FAC	PM	E/F	E/P	F/P
SKILLS — ROUND 1						
Write step-by-step instructions	2.66	2.15	2.18	.0410	n.s.	n.s.
Standard Deviation	1.62	1.32	1.25			
Write journal articles	4.66	3.76	3.83	.0084	.0456	n.s.
Standard Deviation	2.07	2.12	1.93			
Write abstracts	4.60	2.75	3.28	.0001	.0009	n.s.
Standard Deviation	2.13	1.66	1.69			
Write policy statements	4.24	3.05	3.28	.0005	.0166	n.s.
Standard Deviation	2.15	1.90	1.75			
Write evaluations	3.16	2.47	2.90	.0101	n.s.	n.s.
Standard Deviation	1.72	1.46	1.52			
SKILLS — ROUND 2						
Write abstracts	4.21	3.50	4.07	.0032	n.s.	.0103
Standard Deviation	1.24	1.35	.91			
Write evaluations	3.16	2.85	3.38	n.s.	n.s.	.0154
Standard Deviation	1.45	1.06	.98			
EMP = Employers; FAC = Faculty; PM = Policymakers; n.s. = not significant						

evaluations is most needed by upper level supervisors with more work experience than the recent college graduate has acquired.

A.x. Factor Analysis

The items included in the writing survey were further analyzed by conducting a principle-components factor analysis with varimax rotation. This procedure was used to test the validity of the proposed structure of the underlying variables and to gain further insights into these constructs. For the writing area, nine factors were extracted since the original conceptualization consisted of nine dimensions that were believed to account for the writing variables. The rotated factor matrix is illustrated in Tables 17a through 17d.

Table 17a. Writing Goals Survey — Factor Analysis — Factors 1 and 2

Goals	Factor 1	Goals	Factor 2
Include clear statement of main ideas	.77369	Draw on their individual creativity and imagination	.69143
Select, organize, and present details to support a main idea	.70121	Create ideas for their writing	.67435
Organize their writing in order to emphasize the most important ideas	.63201	Make appropriate use of creative techniques of humor and eloquence	.65321
Link key points in an argument with multiple points	.62906	Analyze their own experience to provide ideas for their writing	.63716
Cluster similar ideas	.58723	Use an appropriate tone of voice	.63694
Demonstrate patterns of reasoning	.55455	Use appropriate vocabulary	.59343
State their purpose(s) to their audience	.54073	Arrange words within sentences to fit the intended purpose and audience	.56825
Recognize the rhetorical problem and focus and narrow their plan	.52826	Consider audience and purpose to choose voice, language, and structure	.56206
Refine goals as they write	.52221	Retrieve material from their memory	.53078
Maintain coherence among sentences, paragraphs, and sections	.51872	Use knowledge of audience expectations and values to shape a text	.49830
Identify problems to be solved that their topic suggests	.49465	Select, add, substitute or delete information for a specific audience	.47923
Develop patterns of organization for their ideas	.48436	Vary sentence length and style for rhetorical purposes	.46664
Establish and maintain a focus	.47133	Be aware of multiple purposes and goals	.46564
Move between more abstract and more specific levels of argument	.45655	Plan writing processes with effective strategies and techniques	.45196
Develop their chosen topic	.45591	Write effective introductions and conclusions	.44725
Provide a context for the document in the introduction	.45275	Refine the notion of audience(s) as they write	.41162
Locate and present adequate supporting material	.42763		
Assess and revise their own writing	.37307		
Percent of variance accounted for by factor	8.25	Percent of variance accounted for by factor	7.54

Table 17b. Writing Goals Survey — Factor Analysis — Factors 3 and 4

Goals	Factor 3	Goals	Factor 4
Use correct grammar, syntax, punctuation, and spelling	.78088	Write policy statements	.78836
Correct grammar problems	.75110	Write evaluations	.73155
Avoid common grammatical errors	.71572	Write summaries of meetings	.68555
Revise to improve word choice	.64227	Write scripts for speeches and presentations	.68199
Reduce awkward phrasing and vague language	.60126	Write formal reports	.66910
Maintain coherence within sentences	.57036	Write journal articles	.66578
Use concise language	.50098	Write abstracts	.66190
Diagnose and correct problems	.48611	Write step-by-step instructions	.63449
Add transitions to text as needed	.46365	Write memoranda	.50425
Use active or passive voice where appropriate	.45266	Write letters	.43895
Define or explain technical terms	.41281	Use knowledge of their subject matter to shape the text	.30307
Use language the audience understands	.38250		
Complete pre-printed forms that require written responses	.37554		
Use correct reference forms	.35329		
Write effectively under pressure and meet deadlines	.31494		
Percent of variance accounted for by factor	6.99	Percent of variance accounted for by factor	6.84

Many of the variables from the "organizing" section loaded most heavily on Factor 1. These included the ability to include clear statements of the main ideas; select, organize and present details to support a main idea; organize writing to emphasize the most important ideas; maintain connections that link key points in an argument; demonstrate patterns of reasoning; and cluster similar ideas. In addition, three variables originally in the "pre-writing" section loaded onto this factor as well as three skills from the "drafting" section. These skills included locating and presenting adequate material, focusing and narrowing a plan by recognizing the rhetorical problem to be solved, identifying problems to be solved that the topic suggests, developing their chosen topic, refining goals as they write, and establishing and maintaining a

Table 17c. Writing Goals Survey — Factor Analysis — Factors 5 and 6

Goals	Factor 5	Goals	Factor 6
Understand their audiences' values, attitudes, goals, and needs	.70229	Write informative headings that match their audiences' questions	.76547
Define their anticipated multiple audiences	.69968	Demonstrate their organization by using informative headings	.73768
Address audiences whose backgrounds in the topic vary	.68069	Set up sign posts such as table of contents, indexes, and side tabs	.73237
Consider how an audience will use the document	.64919	Use visual aids, tables, and graphs	.72355
Address audiences whose cultural and communicating norms differ	.61366	Write documents for someone else's signature	.56633
Choose words that their audience can understand	.56916	Create and use an organizational plan	.48543
Understand the relationship between the audience and themselves	.54602	Organize material for more than one audience	.47482
Understand the relationship between the audience and subject material	.51071	Follow the language conventions of their discipline or professional area	.35171
Percent of variance accounted for by factor	5.73	Percent of variance accounted for by factor	5.00

focus when writing. The variables in this factor accounted for approximately eight percent of the variance.

Factors 2 through 5 each accounted for roughly seven percent of the variance. The writing variables that loaded most highly on Factor 2 were primarily items in the "purpose for writing" section and the "pre-writing" activities. Factor 3 was composed mainly of writing variables from the "revising" and "features of the written product" sections of the survey. Factor 4 consisted of solely "written product" variables. The majority of "awareness and knowledge of audience" variables loaded onto Factor 5. The remaining four factors each accounted four percent or less of the variance. Variables in the "organizing" section which referred to audience loaded onto Factor 6 while four "drafting" variables loaded onto Factor 7. The majority of the "collaborating" variables loaded onto Factor 8.

This factor analysis illustrates that many of the variables loaded onto a factor that they were originally grouped with in the survey. However, in some sections certain features overlapped such as the audience-related topics that appeared in two different sections and in two different factors. The consideration of purpose when writing could be incorporated with prewriting

Table 17d. Writing Goals Survey — Factor Analysis — Factors 7, 8, and 9

Goals	Factor 7	Goals	Factor 9
Read and revise drafts to emphasize key points	.68434	Research their subject	.44271
Make general and specific revisions while writing their drafts	.67851	Quote accurately	.41722
Write drafts of their work	.66488		
Develop paragraphs	.63550		
Clarify their policy and position before writing	-.43857		
Percent of variance accounted for by factor	3.89	Percent of variance accounted for by factor	2.20
Goals	Factor 8		
Negotiate critiques of their writing from others	.73022		
Critique other's drafts	.70490		
Collaborate with others	.64995		
Discuss their piece of writing with someone to clarify ideas	.55942		
Percent of variance accounted for by factor	3.89		

activities. Writing is not a set of discrete, unrelated processes. However, for the purposes of developing this survey, categories were useful and provided clarity as the respondents completed the instrument. They stressed that if no headings or categories were used in the survey, they would probably not complete it. Nine different factors or groupings may not be necessary given the results from this analysis.

A.xi. Reliability

The results of the reliability analysis for the writing survey are presented in Table 18. The "pre-writing" section had the highest reliability (a= .90) while the "collaborating" section had the lowest reliability (a= .70). Overall, the reliability of the individual sections in the writing survey tended to increase with the number of items comprising a given section. The majority of reliability coefficients were above a= .80. For the purposes of most studies, reliability coefficients greater than a = .65 were deemed satisfactory (Mehrens & Lehmann, 1973).

Table 18. Reliability of Items in Writing Survey

Sections	Number of Items	Alpha
Awareness and knowledge of audience	8	.8657
Purpose for writing	7	.8039
Pre-writing activities	10	.8041
Organizing	18	.8999
Drafting	13	.8695
Collaborating	4	.7020
Revising	7	.8733
Features of written products	9	.8296
Types of written products	11	.8876
Total writing survey	87	.9650

A.xii. Summary

The findings from this writing survey illuminate the most critical skills which faculty, employers, and policymakers believe college graduates should possess. The purpose of this study was to find the areas of consensus shared by all three stakeholder groups. These key areas represent specific definitions of the elements considered important for effective writing.

In each section of the survey, there were areas where these three groups did reach a consensus about the relative importance of certain skills. Faculty, employers, and policymakers agree that audience awareness is an important skill especially in terms of specific abilities that include considering how an audience will use the document, choosing words that their audience will understand, and understanding the relationship between audience, subject material, and themselves. Furthermore, considerations of audiences' values, attitudes, goals, needs, cultural and communication norms are important. These results are consistent with the previous frameworks of writing that stress the importance of college graduates' abilities to develop a representation of the potential readers of a text (Faigley, 1985; Flower & Hayes, 1980b; Odell, 1981, Odell & Goswami 1985; Sommers, 1980). However, the importance of students' abilities to define *multiple* audiences and to address audiences whose backgrounds in topics vary *widely* is contested among the respondents. Faculty tend to rate these two skills as

extremely important academic objectives while many employers and policymakers disagree. Part of this lack of agreement is based upon the belief held by employers, policymakers, and a minority of faculty that these skills are extremely difficult for new graduates to acquire without substantial experience and development within their professional positions in the workplace. Other employers noted that their workplace was highly specialized so that there were not diverse audiences to interact within those situations. Here the context of the individual workplace of the employer did affect the importance of these two particular skills. Employers with more diverse clients or customers tended to rate these skills as very important.

Some respondents were critical that these two skills are not taught in the classroom. Students tend to write for one audience which is mainly their instructor who reads and evaluates their work. Even several faculty noted the challenges associated with teaching students to write for real audiences with varying levels of background in the topic area.

Writers do need to clearly state their purpose to their audiences in a manner that is consistent with their chosen topic according to the participants in this study. Again, this is consistent with the previous theoretical models (e.g., Faigley et al., 1985; Flower & Hayes, 1980a) and the outcomes from their research. The ability to use creative techniques of humor and eloquence are considered to be of medium importance.

A similar theme of disagreement emerges in the skills associated with defining the purpose of writing that was also evident in the awareness of knowledge area. Should college graduates be aware of *multiple* purposes and goals? The notion of multiple purposes troubles some faculty, employers, and policymakers. They believe that multiple purposes is an extreme standard that is difficult for students to achieve in their collegiate education. They would be satisfied if students could clearly state one purpose. College graduates achieve this skill through experience in the workplace according to some participants. However, this was a skill that faculty rated significantly higher than did the other respondent groups.

The pre-writing phase involves many important skills. College graduates should be able to research their subject, identify problems to be solved that their topic suggests, and discuss their writing with someone to clarify what they wish to say. This planning phase helps writers to prepare for their writing by thinking about a process and design to express their own ideas (Carnevale et al., 1990; Flower & Hayes, 1980b; Loacker et al., 1984). The respondents disagreed about the importance of nearly three-quarters of the specific pre-writing skills (see Table 19). They disagreed about the importance of analyzing experiences to provide ideas for writing as well as creating ideas or retrieving material from memory. Some employers note that their workers do not need to create ideas or analyze their own experiences. Their responses were influenced by the organizational contexts within which they hire new employees. The faculty highly value these creative abilities.

A controversial skill in writing seems to be whether college graduates need to clarify a policy and position before writing. Respondents in all three groups disagreed about when an individual needs to clarify his or her position. Many individuals believe this ability is

Table 19. Summary of Consensus and Disagreements in Each Section of Writing Survey

Section of Survey	Round 1 — Number of Items				Round 2 — Number of Items				Final — Number of Items			
	A	%	D	%	A	%	D	%	A	%	D	%
Awareness and knowledge of audience	3	37.5	5	62.5	3	60.0	2	40	6	75.0	2	25.0
Purpose for writing	4	57.1	3	42.9	1	33.3	2	66.7	5	71.5	2	28.5
Prewriting Activities	3	30.0	7	70.0	0	0.00	7	100.0	3	30.0	7	70.0
Organizing	6	33.3	12	66.7	8	66.7	4	33.3	14	77.8	4	22.2
Drafting	5	38.5	8	61.5	3	37.5	5	62.5	8	61.5	5	38.5
Collaborating	1	25.0	3	75.0	0	0.0	3	100.0	1	25.0	3	75.0
Revising	4	57.1	3	42.9	0	0.0	3	100.0	4	57.1	3	42.9
Features of Written Products	7	77.8	2	22.2	0	0.0	2	100.0	7	77.8	2	22.2
Written Products	6	54.6	5	45.4	3	60.0	2	40.0	9	81.8	2	18.2
TOTAL	39	44.8	48	55.2	18	37.5	30	62.5	57	65.5	30	34.5
A = Number of Items for which there was agreement; D = Number of Items for which there was disagreement												

important throughout the writing process while others think the ability to clarify is very important prior to writing.

The ability to clearly organize and structure a document is essential (Faigley et al., 1981; White & Polin, 1986; Witte et al., 1982). College graduates should be able to maintain coherence within and among sentences, paragraphs, and sections of writing as well as include clear statements about main ideas. The ability to write informative headings to match audience's questions were rated of medium importance. Faculty rate significantly higher than did employers and policymakers the writing goals of linking key points in an argument; moving between abstract and specific levels of argument; selecting, organizing and presenting details to support a main idea; and using knowledge of subject matter to shape a text.

Many students complete an initial draft of their written work and in the classroom have opportunities to make revisions. Flower and Hayes (1980b) as well as Faigley et al. (1985) note the differences between skilled writers and less experienced writers. The more skilled writers are able to better generate ideas and make revisions based upon the relationship

between the reader and the writer. Less-skilled writers are more likely to recall simple facts as they develop topics. The respondent groups believe that certain fundamental or basic skills are extremely important such as quoting accurately, avoiding common grammatical errors of standard written English, establishing and maintaining a focus, writing effective introductions and conclusions, and writing effectively under pressure to meet deadlines.

The main area of contention among the respondent groups centered around the frequency and time involved with revising a written product. While the faculty rate this skill as very important, some employers and policymakers disagree. Some supervisors did not believe that their organization fostered attention or time to the development of multiple drafts of documents that would facilitate revisions. Some individuals seem to expect employees to write good documents upon the initial attempt while faculty encourage multiple cycles of revisions.

Collaboration with others during reading and writing is another goal valued by many faculty. However, some employers and policymakers, due to their workplace environments, emphasized that collaboration was not expected or realistic due to the nature of an individual's job responsibilities. In some organizations, individuals are expected to work on their own rather than in teams. Employers and policymakers did rate the importance of writing documents for another's signature significantly higher than faculty did. Again, this difference can be attributed, at least in part, to the differences in organizational contexts. Employers and policymakers stress that this skill in reality is important for success in some companies.

There are certain features of the written products that all respondent groups believe are important. College graduates should be able to use active or passive voice where appropriate, use correct grammar, use specific language conventions of their academic discipline, and use language that their audience understands. However, employers rate the importance of using visual aids, tables, and graphs as significantly more important than do faculty. There are also actual written products that the participants rate as important documents that college graduates should be able to develop with minimal training in the workplace. These products include memorandum, letters, formal reports, summaries of meetings, scripts for speeches, and the completion of pre-printed forms. However, faculty rate significantly higher than did employers and policymakers the ability to write abstracts and evaluations.

A.xii.b. Advanced Writing Skills

In every area of writing, there are certain skills that all three respondent groups believe are very important for college graduates to achieve in order to be effective employees and citizens. These skills range from very basic and fundamental to more advanced levels. The basic skills, such as quoting accurately and avoiding common grammatical errors, or using concise language, are extremely important according to the stakeholders in higher education. These basic skills were included in this study since they were cited in the literature. While faculty may consider these skills as too elementary for college students, some employers note that their new employees are lacking adequate preparation in some of these areas that hinders their effectiveness in the workplace.

The particular challenge to higher education is how we can better prepare our students to acquire *advanced* writing skills. The ability to write clearly is more than simply conveying information. College graduates with advanced skills analyze their readers' needs, values, attitudes, goals, and expectations as they create their text. Based on this analysis, college graduates make reasoned judgments about how to structure, organize, and develop their ideas in relation to their audience, themselves, and their subject materials as well as their purpose for writing. College graduates understand the relationship between the purpose of their communication and the problems or issues that need to be resolved in achieving that purpose.

College graduates with advanced writing abilities also become their own critics. They evaluate their own writing and recognize confusing or vague language that requires clarification to increase the reader's comprehension. They also learn to cluster similar ideas and categorize information. When college graduates review their own work, they know what the readers may not understand and they define or explain technical terms. They can find examples to remove ambiguities. In general, college graduates should learn to assess their own writing and find ways to correct problems that may exist. When college graduates are their own critics, they willingly correct problems and learn from their mistakes.

When college graduates are developing their own positions, they can use writing as a method to clarify their views. They locate and present material to support or justify their major points. They select evidence or further information that supports their main ideas. They draw conclusions that are supported by relevant reasons. In order to draw these conclusions, college graduates must evaluate the credibility, accuracy, and reliability of the various sources of information that they review. They analyze and evaluate their own arguments or positions to confirm or dis-confirm their own reasoning. College graduates also draw upon their creativity and imagination to engage the audience. They are able to analyze their own experiences to provide ideas for their writing.

College graduates with advanced writing abilities possess dispositions associated with critical thinking. They are open-minded and strive to understand and consider divergent points of view. This disposition is essential, if college graduates are to be able to evaluate norms different from their own to reshape or write a document for different audiences who have different cultural and communication norms than the writer. The tendency to be fair-minded in seeking the truth and impartial is considered important especially when the findings of an inquiry may not support a writer's preconceived ideas. Flexibility and adaptiveness to change are two additional tendencies that help writers to find ways to cope effectively with different audiences' needs and expectations. Equally important, college graduates should find ways to collaborate with others as they are writing and developing their ideas.

When college graduates are drafting and revising their writing, they are aware of and act on the interrelationships between the readers, the subject matter (text), and themselves rather than focusing on one area in isolation. They consider the audience and purpose to shape their voice when writing.

The ability to write effectively and in an advanced manner is intricately tied with the writer's critical thinking abilities. College graduates must move beyond conveying or restating other's facts and ideas. Effective writers learn how to analyze and evaluate information while they concentrate on the interrelationships between themselves, the readers, the text, and their purposes for writing.

Writing is a complex process and has been studied using a variety of methodologies. The survey approach used in this project imposes some limitations on the depth of knowledge that can be gained about these skills. However, this survey process involved the participation of a large group of diverse individuals representing a variety of organizations. These results reflect the perspectives of this group of participants. We make no claim that the writing skills agreed upon in this study will continue to have a consensus among an even larger group of stakeholders. These results provide information that others can consider and critique in order to determine its applications within their own settings.

The outcomes from this survey do not suggest that all institutions should have the same curricular goals and expected outcomes for their college graduates. Instead, this work points the way to essential skills that faculty may wish to consider when they are making revisions to the curriculum or their own classes. It also begins a broader review and dialogue about critical skills among diverse groups of individuals who are committed to improving undergraduate education.

The writing process itself as taught at the collegiate level has the potential to develop undergraduates since it requires them to think, question, and analyze. As college students write their ideas into arguments or positions, they are at the same time clarifying their values and developing their character. As Marshall Gregory (1994, 34) notes "it is not too much to expect that students who work hard at learning to write will improve their powers of reasoning and judgment, refine their recognition of good reasons and shapely argument, and strengthen their respect for well-used language and verbal discourse." The ultimate goal is to improve student performance in writing so that college graduates become more effective communicators at work and in society.

B. Speech Communication Skills

B.i. Basic Speech Communication Skills

The first section of the inventory focuses on *basic speech communication* skills. The sub-skills in this part of the survey relate to selecting and arranging elements to produce spoken messages. This section is further subdivided into a general section, followed by message development and organization, content and situation analysis, message support, and finally, message type.

B.i.a. Basic Speech Communication Skills — General

The respondents to the initial survey agreed about the level of importance for four skill statements in this section (see Table 20a). The skill ranked with greatest importance, "college graduates should be able to state ideas clearly," had a substantial amount of support in the literature (see, for example, Bassett, Whittington, & Stanton-Spicer, 1978; Bienvenu, 1971; Ewens, 1979; Morreale, 1990; and Rubin, 1982). Respondents ranked communicating ethically as the second most important skill, followed by recognizing when it is inappropriate to communicate and communicating candidly (in an open and direct manner).

The two contended statements in this subsection both relate to the issue of communication ethics (see Table 20b). Faculty and policymakers disagreed about the degree to which graduates should be expected to accept responsibility for their own communication behavior. Faculty rated this skill significantly higher than did policymakers. The second statement concerning awareness of language indicating bias on gender, age, ethnic, or sexual/affectional orientation was drawn from both Ruben (1976) and Hymes (1986). In this case, employers rated the skill significantly higher than did policymakers. By the second survey round, all three groups agreed that accepting responsibility for one's own communication behavior and being aware of language indicating bias were extremely important (see Table 20a).

B.i.b. Basic Speech Communication Skills - Message Development and Organization

The ability to choose appropriate and effective organizing methods is a critical skill (Aitken & Neer, 1992; Backlund, Brown, Gurry & Jandt, 1982; Bassett et al., 1978; Di Salvo & Backus, 1981; Johnson & Szczupakiewicz, 1987; Muchmore & Galvin, 1983; Murphy & Jenks, 1982; Rubin, 1982; Witkin, 1973). This involves the identification and attainment of communication goals (Aitken & Neer, 1992; Boileau, 1982; Carnevale, Gainer, & Meltzer, 1990; and Wiemann 1977a, 1977b).

Faculty, employers, and policymakers agreed about the importance of four skills after the first round of surveys. The most important skills were the abilities to structure a message for effectiveness and choose appropriate organizing methods (see Table 21a). Other skills rated as important were using summary statements and outlining key points.

Among the contended statements of this subsection, a disagreement arose from the importance of choosing the topic and message about which graduates are comfortable and knowledgeable to speak (see Table 21a). There were statistically significant differences among all three of the respondent groups with faculty ranking it as most important followed by policymakers then employers. This was the only skill in the message development and organization section for which there were significant differences between employers and policymakers.

Table 20a. Analysis of Variance in Basic Speech Communication Skills — General

	Mean	Mean Square Model	Mean Error Square	Pr > F
SKILLS — ROUND 1				
Recognize when it is appropriate to communicate	2.20	2.09	1.44	.2213
Communicate ethically	1.54	1.65	.63	.0768
Communicate candidly	2.26	.82	1.45	.5692
State ideas clearly	1.48	.20	.52	.6839
Accept responsibility for their own communication behavior	1.62	2.94	.74	.0202*
Be aware of language indicating bias on gender, age, ethnic, or sexual/affectional orientation	2.03	5.70	1.78	.0429*
SKILLS — ROUND 2				
Accept responsibility for their own communication behavior	1.85	.23	.57	.6701
Be aware of language indicating bias on gender, age, ethnic, or sexual/affectional orientation	1.48	.81	1.08	.4710
* Significant differences noted in TUKEY and Least Square Means				

Table 20b. Disagreements about Basic Speech Communication Skills — General

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Accept responsibility for their own communication behavior	1.75	1.47	1.88	n.s.	n.s.	.0382
Standard Deviations	.91	.72	1.11			
Be aware of language indicating bias on gender, age, ethnic, or sexual/affectional orientation	1.83	1.97	2.50	n.s.	.0428	n.s.
Standard Deviations	1.33	1.19	1.69			
EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant						

Table 21a. Analysis of Variance — Message Development and Organization

	Mean	Mean Square Model	Mean Square Error	Pr >F
SKILLS — ROUND 1				
Choose appropriate and effective organizing methods for message	2.50	.23	1.53	.8593
Structure a message for effectiveness with an introduction, main points, useful transitions, and a conclusion	2.10	.55	1.21	.6381
Use summary statement(s) in appropriate contexts	2.75	2.13	1.47	.2359
Outline the key points and sub-points of their spoken message	2.80	1.06	1.93	.5778
Choose topic and message about which they are comfortable and knowledgeable to speak	2.90	32.52	2.50	.0001*
Identify their communication goals	2.50	12.63	1.84	.0013*
Accomplish their communication goals	2.47	5.55	1.80	.0479*
Select the most appropriate and effective medium for communicating	2.61	4.69	1.60	.0553*
Develop and present an interesting and attention-getting introduction in a speech	2.96	16.00	2.53	.0022*
SKILLS — ROUND 2				
Accomplish their communication goals	2.86	1.66	1.18	.2494
Select the most appropriate and effective medium for communicating	2.86	1.49	1.12	.2666
Choose topic and message about which they are comfortable and knowledgeable to speak	2.97	4.30	1.16	.0268*
Identify their communication goals	2.60	4.20	1.11	.0249*
Develop and present an interesting and attention-getting introduction in a speech	3.05	5.08	1.64	.0481*
* Significant differences noted in TUKEY and Least Square Means				

Several authors address identification and attainment of communication goals including Aitken and Neer (1992), Boileau (1982), Carnevale et al. (1990), and Wiemann (1977a and 1977b). Faculty rated the importance of identifying communication goals significantly higher than did employers and policymakers. Faculty also rated the accomplishment of these goals as significantly more important than did employers. The selection of the most appropriate medium for communication was rated most highly by professors. Faculty members ranked significantly more important than did either of the other two groups the development and presentation of interesting and attention-getting introductions.

After the second round of the Delphi instrument, respondents agreed that college students should accomplish their communication goals and select appropriate mediums (see Table 21a). Comments by faculty for the first statement ranged from emphatic endorsement as "high academic priority" to a more mediated characterization. A professor comments, "communication ought not to be excessively goal oriented. It serves many nonpurposive functions as well." Employers tended to believe the accomplishment of goals is difficult and that this skill would develop with experience in the workplace. The emphasis on experience continued with the employers' comments on the selection of an appropriate medium. As one employer writes, "They [college graduates] may seek guidance for this matter with the management." Another administrator remarks, "This is something that can be learned and refined over time after seeing needs of environment." Many faculty elaborated on the relevance of the skill: "It is important to recognize that different media are available and can be utilized according to the topic and context" but others, as well as some employers, suggested the choice is not always under the control of the speaker.

Even after the second round of surveys, the three respondent groups did not agree about the importance of choosing a topic about which the communicator is comfortable and knowledgeable to speak, identifying communication goals, and developing and presenting an interesting introduction (see Table 21b). There was enough reconciliation between the faculty and the policymakers to make the differences no longer statistically significant for the ability to choose a topic. However, employers continued to rate this skill as significantly less important than did faculty and policymakers. A professor explains, "One of the primary reasons there is so much apprehension in speaking is because people do not understand how important it is to use topics in their expertise area." The comments by employers stressed the absence of topic choice which dominated the speaking situations they most often encounter. For example, one writes, "often [it is] not as much [of a choice] as a mandate, (i.e., get comfortable!)," and another comments, "You don't always have the chance to choose in business." There was an emphasis that within the business context, employees have few choices to make in selecting topics. Instead, they are often told or required to deliver certain messages.

Faculty continued to rate goal identification significantly higher than did employers or policymakers. Faculty responded with very positive statements. A professor remarks, "Goals are crucial in a planned communication event." Employers were less convinced of its importance. For example, one employer considered the statement as "academic jargon—not

Table 21b. Disagreements about Message Development and Organization

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Choose topic and message about which they are comfortable and knowledgeable to speak	3.76	2.44	3.05	.0001	.0383	.0231
Standard Deviations	1.85	1.50	1.39			
Identify their communication goals	2.95	2.19	2.79	.0036	n.s.	.0184
Standard Deviations	1.68	1.15	1.40			
Accomplish their communication goals	2.78	2.27	2.64	.0366	n.s.	n.s.
Standard Deviations	1.57	1.24	1.29			
Select the most appropriate and effective medium for communicating	2.89	2.42	2.75	.0342	n.s.	n.s.
Standard Deviations	1.41	1.19	1.26			
Develop and present an interesting and attention-getting introduction in a speech	3.43	2.61	3.35	.0073	n.s.	.0076
Standard Deviations	1.95	1.44	1.48			
SKILLS — ROUND 2						
Choose topic and message about which they are comfortable and knowledgeable to speak	3.35	2.86	2.76	.0228	.0299	n.s.
Standard Deviations	1.17	1.01	1.13			
Identify their communication goals	2.83	2.39	2.86	.0297	n.s.	.0264
Standard Deviations	1.06	1.07	1.00			
Develop and present an interesting and attention-getting introduction in a speech	3.47	2.89	2.94	.0476	n.s.	n.s.
Standard Deviations	1.68	1.19	.87			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

[the] real world," and another felt that it was a moot point as "goals will be/can be established and identified for them [college graduates]."

Faculty and policymakers sufficiently integrated their perspectives about the relative merit of "attention-getting" introductions such that there was no longer any statistical significance between their responses, although faculty rated this skill significantly higher than did employers. Faculty members tended to characterize introductions as critical to the effectiveness of a message. For example, "You lose people many times in the first few minutes of a presentation—sometimes [you can either] build [or] blow [your] credibility for a whole speech encounter [during the introduction]," emphasizes a professor. Policymakers valued the skill less than did the faculty, stressing the content as more important than structure. The issues for employers seemed to be applicability and, like the policymakers, the emphasis of content over form. As one employer writes, "Entry-level hires do not have much opportunity to use these skills."

B.i. c. Basic Speech Communication Skills - Content and Situation Analysis

The adaptability of speakers to a variety of communication roles is stressed by many authors including Aitken and Neer (1992), Backlund et al. (1982), Boileau (1982), and Hanna (1978). In this section, the three respondent groups disagreed about the importance of all six skill statements after the first survey (see Table 22a). Faculty and policymakers rated an understanding of one's role in a variety of settings (e.g., featured speaker vs. the host who introduces featured speaker) as significantly more important than did the employers.

For the remaining statements in this subsection, faculty rated them significantly higher than did employers and policymakers. These skills included preparing a message and adapting the communication style to the context and situation as well as the physical setting; adapting to changes in audience characteristics (e.g., size, interests, concerns, heterogeneity); choosing and broadening topics according to the needs of the audience; and choosing and narrowing the topic according to the occasion.

By the second round of the Delphi instrument, the respondents reached a consensus about the importance of four skills (see Table 22a). The most important skill was adapting to changes in the audience characteristics followed by choosing and narrowing a topic as appropriate, choosing and broadening the topic, and preparing and adapting a message to changes in the physical setting. Faculty stressed the importance of adapting to changes. For example, one faculty member writes, "This part of the process—adaptation—is critical." Another responds with "effective communication is based on audience adaptation." Employers and policymakers tended to agree with the idea expressed by one policymaker: "I believe these are skills one should continue to develop after college. I would not expect them to be very refined in these areas by the time they graduate."

Concerning the statement about narrowing of a topic, the comments ranged from considering it as a lower level, basic skill to be learned with experience to citing the problems students

Table 22a. Analysis of Variance — Context and Situation Analysis

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Understand their roles in a variety of settings	3.03	17.18	2.87	.0030*
Prepare a message and adapt communication style to the context and situation in which the oral communication occurs	2.38	22.75	1.85	.0001*
Adapt to changes in audience characteristics	2.60	25.81	1.79	.0001*
Choose and broaden a topic according to the needs of the audience	2.88	11.80	2.35	.0073*
Choose and narrow a topic as appropriate according to the occasion	2.80	16.15	2.17	.0008*
Prepare a message and adapt or make changes to the physical setting	3.41	21.52	2.93	.0008*
SKILLS — ROUND 2				
Adapt to changes in audience characteristics	2.74	2.08	.98	.1245
Choose and broaden a topic according to the needs of the audience	2.95	1.94	1.09	.1718
Choose and narrow a topic as appropriate according to the occasion	2.89	1.77	1.05	.1898
Prepare a message and adapt or make changes to the physical setting	3.86	2.52	1.57	.2026
Understand their roles in a variety of settings	3.05	6.42	1.26	.0073*
Prepare a message and adapt communication style to the context and situation in which the oral communication occurs	2.56	3.83	1.01	.0245*
* Significant differences noted in TUKEY and Least Square Means				

have actually achieving this goal. Faculty comments about broadening a topic stressed the importance of audience. For example, one writes, "Adapting to audience needs is fundamental." In contrast, the comments by policymakers and employers focused on the attainment of the skill with experience. One policymaker comments, "This is an art learned from experience." An employer adds, "[Graduates] should show growth with experience."

Comments about the final statement of this subsection concerning adaptation to physical environment varied substantially. One faculty member emphasized its importance writing, "Physical setting is as important as content." In contrast, some respondents rated this skill lower since they believe speakers often have little control over the physical setting. For example one employer writes, "We have a competent staff to assist us with this." A policymaker comments, "Circumstances may not allow for controlling these things."

After the second survey round, disagreements remained for just two of the six skills (see Table 22b). The comparative position of faculty and policymakers reversed for the statement concerning the importance of understanding communication roles in a variety of settings. In fact, policymakers re-evaluated it as more important than the faculty initially did and significantly higher than did employers. In the comments about this skill, faculty tended to consider it as fairly elementary. As one writes, it is a "simple lesson of great practical importance to work." Most policymakers referred to the example in the statement (e.g., featured speaker vs. the host who introduces the featured speaker). "A common fault of the introducer is to believe that he/she is the program" states a policymaker. Again the issue for employers seemed to be applicability. As one writes, "Again, [there is] very little occasion for this. But when it occurs, it *is important*."

Faculty rated the importance of adapting the communication style to the context and situation as significantly more important than did employers. The comments made by respondents about this statement tended to fall into three basic categories regardless of their classification (e.g., as faculty). Some felt this is a fundamentally basic skill, that it is more appropriate to associate and expect its attainment in high school. Others felt that it was an issue of obtaining more work experience. Some, particularly but not exclusively faculty, emphatically stressed its importance. A professor writes, "All have a significant impact on success of the message and need attention if a speaker is to be even moderately effective."

B.i.d. Basic Speech Communication Skills — Message Support

Aitken and Neer (1992), Bassett et al. (1978), Hirokawa and Pace (1983), Hunsaker (1989), Muchmore and Galvin (1983), and Rubin (1982) discuss reasoning skills that are necessary to support a message. In this section, respondents agreed on the importance of ten of the 15 skills (see Table 23a). The statement rated as most important was the critical thinking ability of recognizing and using basic reasoning [e.g., drawing specific conclusions from general information, extrapolating general conclusions from specific information]. The second most important statement about the identification of facts, issues, and problems relevant to the topic also relates to critical thinking skills. The respondents also agreed about the importance of demonstrating credibility and substantiation of ideas.

Some communication scholars (including but not limited to, Backlund et al., 1982; Bassett et al., 1978; and Johnson & Szczupakiewicz, 1987) discuss the skills relating to the substantiation of ideas. Of these skills, stating intentions and purposes when appropriate was

Table 22b. Disagreements about Context and Situation Analysis

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Understand their roles in a variety of settings	3.70	2.74	2.98	.0017	.0365	n.s.
Standard Deviations	1.87	1.68	1.46			
Prepare a message and adapt communication style to the context and situation in which oral communication occurs	3.09	1.99	2.53	.0001	n.s.	.0112
Standard Deviations	1.79	1.20	1.09			
Adapt to changes in audience characteristics	3.22	2.16	3.05	.0001	n.s.	.0001
Standard Deviations	1.80	1.10	1.22			
Choose and broaden a topic according to the needs of the audience	3.50	2.57	3.18	.0177	n.s.	.0122
Standard Deviations	1.98	1.38	1.24			
Choose and narrow a topic as appropriate according to the occasion	3.33	2.45	3.08	.0041	n.s.	.0056
Standard Deviations	2.01	1.26	1.16			
Prepare a message and adapt or make changes to the physical setting	4.09	3.03	3.58	.0021	n.s.	.0416
Standard Deviations	2.23	1.51	1.41			
SKILLS — ROUND 2						
Understand their roles in a variety of settings	3.39	3.08	2.57	n.s.	.0045	.0035
Standard Deviations	1.56	.99	.78			
Prepare a message and adapt communication style to the context and situation in which oral communication occurs	2.91	2.39	2.57	.0264	n.s.	n.s.
Standard Deviations	1.34	.90	.74			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

Table 23a. Analysis of Variance — Message Support

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Identify facts, issues, and problems relevant to the topic	1.96	2.78	.94	.0537
Demonstrate competence and comfort with information	2.25	.74	1.12	.5188
Demonstrate credibility	2.16	1.91	1.88	.2021
State intentions and purposes when appropriate	2.32	.51	1.20	.6544
Incorporate information from a variety of sources to support message	2.68	6.39	2.29	.0638
Identify and use appropriate statistics to support the message	2.88	1.60	2.47	.5230
Recognize and be able to use basic reasoning	1.88	.23	.91	.7752
Incorporate language that captures and maintains audience interest in message	2.60	5.03	1.78	.0613
Use humor when appropriate	3.29	.98	3.05	.7242
Use stories and anecdotes when appropriate	3.50	4.72	3.19	.2305
Provide appropriate supporting material based on audience, occasion, and purpose	2.30	11.75	1.41	.0003*
Use motivational appeals that build on values, expectations, and needs of the audience	2.87	11.77	2.25	.0061*
Research effectively information required for message preparation	2.01	10.10	1.64	.0025*
Support message by incorporating statements of others into their own statements	2.90	9.49	2.17	.0137*
Support arguments with relevant and adequate evidence	1.92	5.08	.90	.0040*
SKILLS — ROUND 2				
Use motivational appeals that build on values, expectations, and needs of the audience	2.81	1.67	1.14	.2341

continued on next page

Table 23a. Analysis of Variance — Continued

	Mean	Mean Square Model	Mean Square Error	Pr > F
Research effectively information required for message preparation	2.04	.46	.72	.5300
Support arguments with relevant and adequate evidence	1.92	.70	.49	.2389
Provide appropriate supporting material based on audience, occasion, and purpose	2.40	4.09	1.09	.0254*
Support message by incorporating statements of others into their own statements	2.79	3.17	1.05	.0522*
* Significant differences noted in TUKEY and Least Square Means				

the most highly rated. It was followed by the incorporation of information from a variety of sources to support message. A subdivision of this skill is the identification and use of appropriate statistics. A consensus was reached for the remaining two skills relating to the use of humor and stories and anecdotes. These skills had lower means than did the rest in this section on message support. This perhaps reflects the belief that a more advanced level of proficiency must be attained before the skills can be integrated successfully into a speaking style. Duran (1992) as well as Spitzberg and Hurt (1987) discuss the effectiveness of humor as a tool to diffuse social tension, relieve an individual's anxiety, and resolve conflict.

For all five of the contested statements, faculty ranked the skills higher than did employers or policymakers (see Table 23b). The first statement, "College graduates should be able to provide appropriate supporting material based on audience, occasion, and purpose" relates to several issues previously discussed, including adaptability and the accommodation of the audience. There was a significant difference between the response of faculty and both employers and policymakers. For the next skill concerning the use of motivational appeals building on values, expectations, and the needs of the audience, policymakers marked it significantly lower in importance than did both employers and faculty. Employers and policymakers rated the skill of supporting arguments with relevant and adequate evidence as significantly less important than did faculty.

The ability to research information required for message preparation (e.g., seeking information in books and periodicals, identifying and questioning appropriate authorities) relates to some of the previously mentioned skills concerning the development of supporting material for

Table 23b. Disagreements about Message Support

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Provide appropriate supporting material based on audience, occasion, and purpose	2.65	1.99	2.68	.0026	n.s.	.0014
Standard Deviation	1.39	1.10	1.12			
Use motivational appeals that build on values, expectations, and needs of the audience	2.78	2.67	3.55	n.s.	.0172	.0021
Standard Deviation	1.55	1.48	1.50			
Research effectively information required for message preparation	2.47	1.75	2.13	.0061	n.s.	n.s.
Standard Deviation	1.78	.94	1.30			
Support message by incorporating statements of others into their own statements	3.36	2.65	2.95	.0083	n.s.	n.s.
Standard Deviation	1.69	1.41	1.30			
Support arguments with relevant and adequate evidence	2.09	1.73	2.26	.0482	n.s.	.0039
Standard Deviation	1.22	.76	.99			
SKILLS — ROUND 2						
Provide appropriate supporting material based on audience, occasion, and purpose	2.71	2.20	2.54	.0169	n.s.	n.s.
Standard Deviation	1.12	1.05	.92			
Support message by incorporating statements of others into their own statements	3.10	2.63	2.86	.0333	n.s.	n.s.
Standard Deviation	1.20	1.00	.84			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

messages. Faculty rated this significantly higher than did employers. In addition, faculty and employers disagreed about the importance of supporting messages through the incorporation of statements developed by others (e.g., quoting correctly or paraphrasing objectively).

By the second round of the survey, the respondents had reached consensus for an additional three skills in the subsection on message support (See Table 23a). They agreed that college graduates should be able to research information effectively, use motivational appeals, and support arguments with relevant evidence. The comments by faculty about supporting a message through effective research characterized it as a fundamental trait of education and central in message preparation: "Inaccurate or dated information makes presentation useless and, sometimes, dangerous." Employers contextualized the skill within their specific fields. "If a recent grad[uate] knows nothing else—he's at least *expected* to do research correctly," states an employer. Another notes "new employees need time to learn industry specific sources and technological tools and data bases." However, an executive questions "Who has time to do all these things—it's a great theory, but not real world."

The respondents offered comments about supporting an argument with relevant evidence. An employer characterizes it is as a "basic skill. How can you convince others without supporting documents?" Faculty members tended to agree that "Ethical and effective use of evidence is a *key* element of effective communication." The most negative of the comments comes from a policymaker—"people will believe what you say."

After the second round of surveys, the respondents failed to agree about the importance of two skills: providing appropriate supporting material based on audience, occasion, and purpose and supporting messages with the incorporation of statements by others (see Table 23b). Faculty continued to rate both of these skills as more important than did employers. Faculty considered providing appropriate supporting material as essential. One professor remarks, "This is the real base of good communication." Policymakers viewed it as a more sophisticated skill and slightly less critical. "This facility comes with post college experience—most often" states a policymaker. Another comments, "No real departure here—I just don't think it's that important." Employers questioned the value of this skill. As one employer notes, this is "not really applicable to entry-level job responsibilities." Employers and policymakers tended to view this skill as too advanced for college graduates to achieve.

Some faculty members stressed the importance of incorporating statements of others into messages. "This is basic ethics. Ethical communication necessitates this" stresses one professor. A policymaker simply qualified the statement as "manners" while an employer considered it as "critical to supporting main idea."

B.i.e. Basic Speech Communication Skills — Message Type

Of the five skills in this section, respondents only agreed and rated of medium significance the importance of composing and delivering an entertainment-oriented speech when appropriate (e.g., an after dinner speech, a toast) (see Table 24a). The respondents rated it much lower than they rated most items.

Table 24a. Analysis of Variance — Message Type

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILL—ROUND 1				
Compose and deliver an entertainment-oriented speech when appropriate	4.90	6.35	4.19	.2222
Compose and deliver an informative speech	2.17	24.41	1.86	.0001*
Develop messages that influence attitudes, beliefs, and actions	2.58	21.85	2.14	.0001*
Deliver an impromptu or extemporaneous talk about topics with which the speaker is familiar	3.52	13.24	3.48	.0238*
Describe or express feelings to others when appropriate	2.75	8.31	2.48	.0371*
SKILLS — ROUND 2				
Develop messages that influence attitudes, beliefs, and actions	2.68	1.55	.94	.1949
Deliver an impromptu or extemporaneous talk about topics with which the speaker is familiar	3.65	4.22	1.84	.1043
Describe or express feelings to others when appropriate	3.02	1.41	1.02	.2529
Compose and deliver an informative speech	2.67	4.02	1.24	.0419*
* Significant differences noted in TUKEY and Least Square Means				

The respondents disagreed about four skills, three of which deal explicitly with different types of messages—informative, persuasive, and extemporaneous. Both faculty and policymakers rated the composition and delivery of an informative speech significantly higher than did employers (see Table 24b). Faculty also ranked the ability to develop messages that influence attitudes, beliefs, and actions as significantly more important than did both employers and policymakers. The statement concerning the delivery of an impromptu or extemporaneous talk was rated significantly higher by the policymakers than by the employers.

The final skill of this section has less to do with the formalized and even formulaic message types previously discussed. Many authors (including but not limited to Boileau, 1982 and Duran, 1983) discuss skills relating to the description or expression of feelings to others. Contrary to previous patterns, employers rated this skill significantly higher than did policymakers.

Table 24b. Disagreements about Message Type

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Compose and deliver an informative speech	2.95	1.80	2.18	.0002	.0193	n.s.
Standard Deviation	2.05	1.00	1.06			
Develop messages that influence attitudes, beliefs, and actions	2.96	2.17	3.23	.0082	n.s.	.0001
Standard Deviation	1.97	1.27	1.12			
Deliver an impromptu or extemporaneous talk about topics with which the speaker is familiar	4.04	3.22	3.70	n.s.	.0099	n.s.
Standard Deviation	2.32	1.68	1.65			
Describe or express feelings to others when appropriate	2.44	2.71	3.28	n.s.	.0099	n.s.
Standard Deviation	1.27	1.67	1.68			
SKILLS — ROUND 2						
Compose and deliver an informative speech	2.65	2.11	2.23	.0474	n.s.	n.s.
Standard Deviation	1.56	.90	1.00			
EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant						

After the second round of the survey, consensus was reached for three of the four initially contended skills in the message type subgroup (see Table 24a). Of the three, the development of messages that influence attitudes, beliefs, and actions was rated the most important. Comments by faculty members stressed the applicability of persuasion. A professor notes it is the "most important skill for health and growth of society" while another stresses "Students can't only have ideas; they must sell them." Employers also emphasized the importance of influencing ideas, although they tended to be more specific about the context. For example, one writes, "This is selling! We all do it, and it is important that we do it well." Policymakers emphasized content or substance rather than the type of message. For example, an administrator remarks "the message is more important than the form or style."

Respondents also stressed the importance of delivering an impromptu or extemporaneous talk. The following comments by two employers tend to summarize the general perspective of all

three groups. "[This skill is] more important to me since impromptu is real world," states a manager while another comments, "Employees must always be prepared to respond extemporaneously or in an impromptu setting." The statement about describing or expressing feelings to others was considered important. Employers tended to reflect on the skill's impact on successful professional development. As one employer explains, "If employees can't clearly and concisely express their feelings, issues important to their career may be lost or be of less value." In general, comments by faculty tended to be positive, as one qualifies it is "important for personal and societal health."

Composition and delivery of an informative speech was the only skill of this subgroup for which consensus was not achieved in the second round of the Delphi instrument (see Table 24b). Faculty rated this skill significantly higher than did employers. One professor characterized the skill as the "most common formal speaking situation." One policymaker comments (with some faculty members agreeing) that "persuasion skills [are] vital, information [skills are] less so." The general view captured and explained by one employer is that "informal communication is more important for [the] entry level employee." Employers did not believe that composing and delivering an informative speech was relevant for most of their employees.

From all of the subsections of the Basic Speech Communication Skills, the most valued statement for both rounds was the ability to state ideas clearly. The least valued statement was the ability to compose and deliver an entertainment-oriented speech when appropriate (e.g., an after dinner speech, a toast).

B.ii. Interpersonal and Group Communication

This next major category examines the importance of skills relating to the development and management of human relations. Central elements include social interaction (including conversation), conflict resolution, and small group discussion. While historically much of the literature generated by speech scholars and researchers has focused on the development of more *formal public* messages, there is now much greater awareness of the unique constraints that interpersonal and group communication situations pose. Consequently, more attention has been placed on studying and researching interpersonal and group interactions. This section is subdivided into five basic groups—situation analysis, relationship management, information exchange, conversation management, and group communication.

B.ii.a. Interpersonal and Group Communication — Situation Analysis

Faculty, employers, and policymakers agreed about the importance of seven skills during the first round of the survey (see Table 25a). The most important skill was the ability to identify and manage misunderstandings closely followed by recognizing when it is inappropriate to speak. The respondents also agreed that college graduates should understand status and

Table 25a. Analysis of Variance — Interpersonal and Group Communication — Situation Analysis

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Recognize when it is inappropriate to speak	2.06	.41	1.50	.7604
Identify and manage misunderstandings	2.01	2.46	1.12	.1127
Understand status and relationship between communicators	3.34	.37	2.80	.8770
Recognize time constraints of a communication situation and know how to operate within them	2.30	.02	1.47	.9866
Adjust to factors that might inhibit effective communication	2.74	.33	1.94	.8453
Reduce barriers or interference that may inhibit the communication process	2.92	7.18	2.40	.0523
Recognize when it is appropriate to schedule or participate in meetings	3.19	.85	2.92	.7473
Recognize when another does not understand their message	1.80	1.98	.74	.0724*
Identify and adapt to the perceived needs and desires of other communicators	2.55	14.77	1.70	.0002*
Make effective decisions during communication situations	2.26	5.19	1.24	.0166*
Understand the influence of culture on language	2.39	11.98	1.70	.0011*
SKILLS — ROUND 2				
Recognize when another does not understand their message	1.98	.06	.73	.9181
Identify and adapt to the perceived needs and desires of other communicators	2.68	.28	1.07	.7707
Make effective decisions during communication situations	2.21	.43	.76	.5695
Understand the influence of culture on language	2.73	7.80	.91	.0003*
* Significant differences noted in TUKEY and Least Square Means				

relationships between communicators (e.g., know when to use formal titles such as "Doctor" or Your Honor"); recognize time constraints of a communication situation and know how to operate within them; adjust to factors that might inhibit effective communication (e.g., defer questions if time is inadequate, move away from crowds when conducting a serious conversation); adjust to factors that might inhibit effective communication; and recognize when it is appropriate to schedule or participate in a meeting.

For the remaining four statements, faculty rated them significantly more important than did policymakers (see Table 25b). The contended statements were the abilities to recognize when another does not understand their message; to identify and adapt to the perceived needs of other communicators in which policymakers disagreed with employers; to make effective decisions during communication situations; and to understand the influence of culture on language. For this final statement, faculty also disagreed with employers.

After the second round of the Delphi instrument, consensus was achieved for three additional skills: College graduates should be able to recognize the miscomprehension of a message, identify and adapt to perceived needs and desires of other communicators, and finally, make effective decisions (see Table 25a).

However, the three groups disagreed about the importance of understanding the influence of culture on language (see Table 25b). Faculty rated this skill significantly higher than did employers and policymakers. Most respondents tended to write supportive comments for this particular skill. A professor remarks, "It is increasingly important to understand the variances between cultures in gaining an understanding of individuals." Another professor states, "The context of one's culture greatly affects meaning." Other faculty members called for an increased emphasis on the development of this skill in college. A professor laments that "too few recognize that culture matters to the degree that it really does." Some policymakers and employers wrote similar positive comments and stressed the importance of this skill given our increasingly diverse society and the emergence of a more global, international world of communication.

All three respondent groups agreed about the importance of the majority of skills in this situation analysis section. The most important skill was the ability to identify and manage misunderstandings while the least important was the recognition of when it is appropriate to schedule or participate in a meeting.

B.ii.b. Interpersonal and Group Communication — Relationship Management

Interpersonal and group communication competence requires relationship management skills. These skills include the general development and maintenance of relations, appropriate self-disclosure, as well as responding to challenging communication situations. All of these components of effective relationship management are discussed throughout the discipline of communication studies (e.g., Carnevale et al., 1990; Hunsaker, 1989; Larson et al., 1978;

Table 25b. Disagreements about Interpersonal and Group Communication Skills — Situation Analysis

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Recognize when another does not understand their message	1.76	1.71	2.08	n.s.	n.s.	.0351
Standard Deviation	.88	.82	.27			
Identify and adapt to the perceived needs and desires of other communicators	2.51	2.30	3.30	n.s.	.0073	.0001
Standard Deviation	1.46	1.21	1.32			
Make effective decisions during communication situations	2.33	2.08	2.67	n.s.	n.s.	.0096
Standard Deviation	1.16	1.05	1.22			
Understand the influence of culture on language	2.80	2.09	2.73	.0081	n.s.	.0016
Standard Deviation	1.75	1.13	1.04			
SKILLS — ROUND 2						
Understand the influence of culture on language	3.17	2.46	2.91	.0008	n.s.	.0088
Standard Deviation	1.14	.90	.82			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

Ruben, 1976; and Stanley & Shockley-Zalabak, 1985). They emphasize the importance of understanding and valuing differences in communication styles (e.g., speech that is difficult to understand due to a handicap, the culture, or accent of the speaker).

Self disclosure, another element of effective relationship management, is discussed by several authors in a variety of different contexts. For example, Bassett et al. (1978), Glaser (1983), and Rubin (1982) believe college graduates should be able to express their feelings to others. Muchmore and Galvin (1983) discuss the importance of suppressing feelings when their disclosure would be inappropriate. Furthermore, Aitken and Neer (1992), Canary and Spitzberg (1987), Duran (1992), Glaser (1983), Spitzberg and Hurt (1987), and Sypher (1984) emphasize that college graduates should be able to accurately recognize and control levels of their own disclosure.

The development of relationships through communication is often problematic. Several authors describe those challenges and solutions which they require. Di Salvo and Backus (1981) discuss of the identification and management of miscommunication as well as Muchmore and Galvin (1983) and Stanley and Shockley-Zalabak (1985) who review the challenges with conflict management in general. Ratliffe and Hudson (1987) elaborate on the responses to difficult communication situations such as using effective self-assertion skills. Another important skill to resolve conflict effectively is empathy. The ability to convey a feeling of connection and affinity is cited in the literature (Aitken & Neer, 1992; Cegala, 1981; Di Salvo, Larsen, & Seiler, 1976; Duran, 1992; Muchmore & Galvin, 1983; Murphy & Jenks, 1982; Parks, 1985; Rubin, 1982; Sypher, 1984; and Wiemann, 1977a and 1977b)

After the initial round of surveys, consensus was reached for only two of the 11 skills involving relationship management (see Table 26a). The ability to break off non-constructive relationships when appropriate was ranked most important followed closely by the ability to disclose appropriate information about themselves when relevant.

For the nine remaining skills there was some disagreement between the three groups (see Table 26b). Faculty did not always rank the skills higher than did the other two respondent groups as was evident in the other sections. In fact, employers often considered relationship management skills more important than did the other two groups. Employers rated the skills of building and maintaining constructive relationships and coping with negative feedback significantly higher than did faculty and policymakers. Employers also rated expressing feelings to others, effectively asserting themselves, managing conflict, and motivating others to disclose information when appropriate significantly higher than did policymakers. However, faculty considered both the understanding and valuing differences in communication styles along with allowing others to express different views as significantly more important than did either of the other respondent groups.

After the second round of surveys, the respondents reached consensus regarding six additional skills—understanding and valuing different communication styles, allowing others to express different views, describing or expressing feeling to others, asserting themselves effectively, managing conflict, and conveying empathy (see Table 26a). The statement considered most important for both rounds of the surveys for this subsection concerned the management of conflict. One employer comments, "Things can really get out of hand in (the) workplace. Many conflicts would be avoided if people learned to manage conflict." Some of the faculty and policymakers qualified the importance of conflict management. "Again—must balance with other concerns (ethical issues, consistency, etc.)" states a professor. "*Every* decision we make involves conflict . You have to manage it or it manages you. This is a *required* skill," emphasizes a policymaker. In addition, the respondents agreed that the ability to understand and value differences in communication styles is important. An employer states "again, successful, mature business people must be sensitive to these issues to be successful. [There is] too much opportunity to offend others." "In a diverse workplace, failure here could have grave consequences" cautions a faculty member. "Our culture is becoming increasingly diverse. We must make every effort to allow for these differences," stresses a policymaker. The respondents

Table 26a. Analysis of Variance — Relationship Management

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Break-off non-constructive relationships when appropriate	3.26	1.46	2.97	.6116
Disclose appropriate information about themselves when relevant	3.28	5.53	2.77	.1384
Build and maintain constructive relationships with superiors, peers, and subordinates	1.79	5.60	.93	.0028*
Understand and value differences in communication styles	2.44	13.07	1.90	.0013*
Allow others to express different views	1.65	4.46	.86	.0062*
Describe or express feelings to others when appropriate	2.47	3.84	1.95	.1431*
Cope with negative feedback	1.94	5.28	.91	.0035*
Effectively assert themselves	2.34	3.67	1.35	.0691*
Manage conflict	1.83	4.03	1.04	.0223*
Convey empathy when communicating	2.48	5.37	1.61	.0378*
Motivate others to disclose information when appropriate	3.11	6.87	2.18	.0447*
SKILLS — ROUND 2				
Understand and value differences in communication styles	2.70	.18	.83	.8050
Allow others to express different views	1.86	.08	.52	.8547
Describe or express feelings to others when appropriate	2.39	.28	1.03	.7603
Effectively assert themselves	2.08	.53	.58	.4046
Manage conflict	1.85	.47	.58	.4469
Convey empathy when communicating	2.67	.01	1.23	.9895
Build and maintain constructive relationships with superiors, peers, and subordinates	2.01	3.08	.57	.0055*
Cope with negative feedback	2.03	2.30	.73	.0448*
Motivate others to disclose information when appropriate	3.01	4.38	1.42	.0486*
* Significant differences noted in TUKEY and Least Square Means				

Table 26b. Disagreements about Relationship Management

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Build and maintain constructive relationships with superiors, peers, and subordinates	1.42	1.88	2.05	.0034	.0015	n.s.
Standard Deviation	.71	1.04	1.04			
Understand and value differences in communication styles	2.91	2.12	2.70	.0048	n.s.	.0074
Standard Deviation	1.80	1.22	1.11			
Allow others to express different views	1.85	1.46	1.90	.0259	n.s.	.0081
Standard Deviation	1.61	.80	.90			
Describe or express feelings to others when appropriate	2.25	2.44	2.83	n.s.	.0449	n.s.
Standard Deviation	1.16	1.48	1.47			
Cope with negative feedback	1.56	2.09	2.03	.0005	.0123	n.s.
Standard Deviation	.83	1.02	.89			
Effectively assert themselves	2.05	2.38	2.60	n.s.	.0256	n.s.
Standard Deviation	1.19	1.16	1.28			
Manage conflict	1.56	1.85	2.15	n.s.	.0097	n.s.
Standard Deviation	.94	1.01	1.14			
Convey empathy when communicating	2.27	2.42	2.93	n.s.	.0110	.0241
Standard Deviation	1.27	1.30	1.16			
Motivate others to disclose information when appropriate	2.73	3.17	3.48	n.s.	.0095	n.s.
Standard Deviation	1.38	1.56	1.34			
SKILLS — ROUND 2						
Build and maintain constructive relationships with superiors, peers, and subordinates	1.68	2.08	2.20	.0143	.0050	n.s.
Standard Deviation	.89	.72	.68			

continued on next page

Table 26b. Continued

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
Cope with negative feedback	1.75	2.16	2.03	.0248	n.s.	n.s.
Standard Deviation	1.01	.74	.92			
Motivate others to disclose information when appropriate	2.64	3.20	2.94	.0348	n.s.	n.s.
Standard Deviation	1.40	1.24	.72			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

agreed that the related skill of allowing others to express different views was important as well as expressing oneself in an assertive manner. The respondents' comments about effective assertion stressed a distinction between assertion and aggression. One employer notes that assertion should not become aggressive or domineering." "Assertion, not aggression is essential," concurs a professor. A policymaker concludes, "If you are going to assert, make it effective."

Employers considered conveying empathy as fundamental to their specific jobs. "[It's] very important to H[uman] R[esources]" states an executive while another manager stresses "[It's] very important in customer-related fields." An employer elaborates, "Much of our work involves interactions, and we, therefore, must be compassionate and understanding of others feelings." Policymakers further expanded on the importance of this skill. An administrator writes, "A high level of empathy enhances the probability of a good communicator." Faculty, in general concurred, but one professor made this distinction, "I'm less concerned with conveying empathy than their ability to understand and take into account the position of another person."

For the three remaining skills for which consensus was not reached, employers consistently rated them higher than did the policymakers and faculty (see Table 26b). Employers emphasized the importance of building and maintaining constructive relationships. Employers commented that relationship building is "absolutely essential," and its absence is "a major cause of lost jobs." Policymakers believed this skill increases with experience. One professor notes that this is an "admirable goal, but [it] goes beyond speech competency and requires experience graduates don't yet possess." Most faculty considered it as a skill that would be developed after completion of college.

The ability to cope with negative feedback was significantly more important from the employer perspective than from the faculty perspective. Despite this difference, some faculty and policymakers tended to be positive in their comments about the skill. One faculty member even went so far as to say that there is "no such thing as negative feedback." However, respondents from all three groups did offer some qualifiers. One employer found that

personnel evaluations did not always result in improvement. In addition, one policymaker stressed the importance of both the source and the purpose of the feedback.

For the skill of motivating others to disclose information, employers rated it significantly more important than did faculty. Employers emphasized situations in which this skill was important to them. One writes, "This is an essential aspect of [an] auditor's job." Another employer comments, "All of these are critical skills for those who work in schools—be they teachers or support staff." Faculty tended to be concerned with the ethical implications of this. To some, the statement suggested a level of manipulation or coercion with which they were uncomfortable. For example, one professor notes, "Disclosure ought to be voluntary." "This item suggests [self-disclosure] should be 'motivated' by another," remarked another. A third referred to George Orwell's novel, "[this skill statement] sounds 1984-ish."

B.ii.c. Interpersonal and Group Communication — Information Exchange

Information exchange is considered an important skill by many communication experts. Curtis, Winsor, and Stevens (1989), Di Salvo and Backus (1981), and Ratliffe and Hudson (1987) discuss the importance of giving feedback appropriately and the ability to offer constructive criticism. Rubin (1982) notes the importance of giving concise and accurate directions.

From the initial survey, the respondents reached consensus for five of the eight skills in this subsection (see Table 27a). The three skills ranked as most important were listening attentively to questions and comments from other communicators, asking questions effectively, and answering questions concisely and to the point or issue. Respondents also agreed about the importance of giving feedback appropriately and giving concise and accurate directions.

A pattern of disagreement emerged for three skills in this section. Employers and faculty felt responding appropriately to feedback was significantly more important than did policymakers. Employers also considered college students ability to ask questions when they do not understand another's message as well as their ability to paraphrase or restate what a speaker has said to confirm his/her meaning of greater importance than did the policymakers.

After the second round of the survey, the respondents reached consensus on all of the skills in which they differed in round one. They agreed that college graduates should respond appropriately to feedback, ask questions when another's message is unclear, and restate a message to confirm meaning.

B.ii.d. Interpersonal and Group Communication — Conversation Management

The importance of initiating and managing conversations is discussed by Ratliffe and Hudson (1987) and Spitzberg and Hurt (1987). Di Salvo and Backus (1981) and Glaser (1983) reviewed the importance of interviewing skills.

Table 27a. Analysis of Variance — Information Exchange

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Listen attentively to questions and comments from other communicators	1.76	1.43	.85	.1894
Give feedback appropriately	2.18	1.42	1.07	.2690
Ask questions effectively	1.82	1.57	.79	.1402
Answer questions concisely and to the point or issue	1.97	.55	.93	.5537
Give concise and accurate directions	2.24	.17	1.85	.9103
Respond appropriately to feedback	1.98	2.25	.87	.0765*
Ask questions when they do not understand another's message	1.95	3.84	.96	.0194*
Paraphrase or restate what speaker has said to confirm his/her meaning	2.57	3.48	1.60	.1163*
SKILLS — ROUND 2				
Respond appropriately to feedback	2.03	1.74	.89	.1455
Ask questions when they do not understand another's message	1.93	1.50	.76	.1426
Paraphrase or restate what speaker has said to confirm his/her meaning	2.86	1.84	1.21	.2215
* Significant differences noted in TUKEY and Least Square Means				

Among the 13 skills in this subsection, respondents agreed about the importance of nine areas in the first round (see Table 28a). The means for this section illustrated that respondents tended to rank these skills as less important than those in other sections of this survey. The three most valued skills were college graduates' ability to be open-minded about another's point of view, manage multiple conversational goals effectively, and convey enthusiasm for the topics through delivery. Respondents also reached consensus about the importance of introducing new topics, sustaining topics and discussion and offering follow-up comments, interrupting effectively, beginning and ending a conversation effectively, negotiating effectively, giving and receiving compliments gracefully, and giving bad news to others with empathy.

Table 27b. Disagreements about Information Exchange

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Respond appropriately to feedback	1.87	1.92	2.28	n.s.	.0403	.0428
Standard Deviation	.92	.93	.93			
Ask questions when they do not understand another's message	1.73	1.93	2.30	n.s.	.0068	n.s.
Standard Deviation	.87	.99	1.07			
Paraphrase or restate what speaker has said to confirm his/her meaning	2.33	2.58	2.88	n.s.	.0331	n.s.
Standard Deviation	1.37	1.27	1.09			
EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant						

For the remaining four skills, there were different perceptions (see Table 28b). Faculty and employers ranked the ability to demonstrate attentiveness through non-verbal and verbal behaviors (e.g., nod, respond with facial expressions to message, vocalize agreement by saying "yes" or "uh-huh") significantly more important than did policymakers. Faculty rated significantly higher than did policymakers the ability to convey enthusiasm for the topic through delivery (e.g., vary pitch volume, and tone; use appropriate stance, posture, eye contact to develop a rapport with the audience). The ability to approach and engage in conversation with new people in new settings was important in the literature (for example, Duran, 1992). It was ranked significantly more important by employers than by faculty and policymakers.

After the second survey round, the respondents reached agreement for all four skills. College graduates should convey enthusiasm for the topic through delivery, have confidence to approach and engage in conversation, be open-minded, and demonstrate their attentiveness (see Table 28a). The abilities of conveying enthusiasm and open-mindedness were ranked by respondents as more important than any of the skills for which consensus was reached in the initial round. Some of the comments about conveying enthusiasm for a topic through delivery suggested that such a skill relates to more formal or "public" speaking. As one employer notes, "New employees do little public speaking." However, some respondents from each group considered it as a skill developed by mature adults with work experience. A professor states, "This skill is refined with experience, not book learning." "This increases with experience—don't expect fullness," agrees a policymaker.

Table 28a. Analysis of Variance — Conversation Management

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Manage multiple communication goals effectively	2.41	.40	1.74	.7930
Begin and end a conversation in an appropriate and socially acceptable manner	2.74	.05	2.26	.9793
Introduce new topics when appropriate	3.27	2.06	2.14	.3834
Sustain topics and discussion and offer follow-up comments when appropriate	3.12	.55	1.96	.7565
Interrupt effectively when appropriate and possible	3.27	1.01	2.47	.6657
Conduct and participate in an interview	2.61	.36	2.32	.8554
Negotiate effectively	2.79	.66	2.81	.7901
Give bad news to others with empathy	2.90	4.33	2.65	.1984
Give and receive compliments gracefully	3.09	.86	3.37	.7750
Demonstrate attentiveness through nonverbal and verbal behaviors	2.64	9.37	2.14	.0139*
Convey enthusiasm for topic through delivery	2.38	4.31	1.69	.0810*
Have confidence to approach and engage in conversation with new people in new settings	2.56	7.24	1.77	.0183*
Be open-minded about another's point of view	1.71	6.95	.91	.0007*
SKILLS — ROUND 2				
Demonstrate attentiveness through nonverbal and verbal behaviors	2.93	3.88	1.64	.0966
Convey enthusiasm for topic through delivery	2.30	.18	1.27	.8683
Have confidence to approach and engage in conversation with new people in new settings	2.65	1.38	.91	.2203
Be open-minded about another's point of view	2.19	.37	.87	.6559
* Significant differences noted in TUKEY and Least Square Means				

Table 28b. Disagreements about Conversation Management

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Demonstrate attentiveness through nonverbal and verbal behaviors	2.53	2.47	3.25	n.s.	.0293	.0066
Standard Deviation	1.60	1.36	1.55			
Convey enthusiasm for topic through delivery	2.29	2.28	2.80	n.s.	n.s.	.0347
Standard Deviation	1.23	1.35	1.24			
Have confidence to approach and engage in conversation with new people in new settings	2.13	2.67	2.83	.0110	.0113	n.s.
Standard Deviation	1.23	1.37	1.34			
Be open-minded about another's point of view	1.84	1.50	2.15	n.s.	n.s.	.0003
Standard Deviation	1.24	.78	.97			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

The skill about having confidence to approach people also garnered positive comments. As one employer explains, "There is so much business that takes place in a *social* setting that this is a critical component to a successful businessperson." One faculty member relates it to the mission of his/her college: "Lack of confidence may truly hinder lifelong learning—*the* goal for any self-respecting, liberal arts college."

The comments from each of the respondent groups stressed the importance of open-mindedness. According to one employer, it is "essential to communication. Listening with an open mind is essential for team building [in a matrix environment] and for interpersonal relationship building." A policymaker explains, "This doesn't mean we will *agree* with the other person, but we must consider his viewpoint. We can't assume we are the bearers of all wisdom." One faculty member considers this skill as an expected byproduct of a college education: "[It is] the single most important contribution college can make to a person's development."

Despite respondents' lower rating of the importance of demonstrating attentiveness skill in the second round, the faculty comments were generally positive. For example, one writes that this skill "creates an atmosphere that generates more information." Some faculty did qualify the

importance of the skill. As one professor explains, it "indicates superficial listening only." The comments by employers maintained a similar pattern of endorsement. One employer emphasizes that "Body language is everything! If for no other reason than to effectively interview." Another expresses concern that "attentiveness may be perceived as 'fake' if over emphasized by listener." Corresponding to their slightly lower evaluations, some policymakers tended to react to the skill in more negative terms than did faculty or employers. For example, one policymaker characterizes demonstrating attentiveness as an "annoying behavior, [it] should be discouraged." Another considers the skill "over-emphasized—[and that it] can be deceptive."

B.ii.e. Interpersonal and Group Communication — Group Communication

Curtis, Winsor and Stevens (1989), Di Salvo (1980), Di Salvo et al. (1976), Hanna (1978), Hirokawa and Pace (1983), Lohr (1974), and Muchmore and Galvin (1983) and others discuss group problem solving skills. Many of these were discussed in other sections, such as appropriate levels of self-disclosure; identification of facts, issues, and problems relevant to the topic; and being open-minded about the views of others contribute to effective group problem solving. Other relevant abilities include the ability to brainstorm or initiate ideas, to request information efficiently, and to evaluate ideas carefully.

In this final subsection of interpersonal communication, the respondents agreed about the importance of all 15 skills (see Table 29). The most important skill was working on collaborative projects as a team followed by the ability to motivate others to participate and work effectively as a team. Respondents also agreed that understanding and implementing different methods of building consensus; fostering a sense of community between group members; identifying points of agreement and disagreement between communicators; identifying common purposes and interests of a group; matching people, interests, and tasks when coordinating a group project; recognize all members' role in a small group (e.g., recognize when they are acting as a leader, facilitator, disrupter); allowing others to take credit for achievement when appropriate; generating conversation and discussion from quite members in a group; managing troublesome members in a group; confronting others effectively in appropriate contexts; leading meetings effectively, keeping group discussions relevant and focused, and setting and managing realistic agendas were all important skills.

B.iii. Communication Codes

Communication codes are generally considered to be important skills for college students. The abilities to use and understand spoken English including the use of pronunciation, grammar, and articulation appropriate to the designated audience are cited by communication scholars as essential skills (Backlund et al., 1982; Bassett et al., 1978; Duran, 1983; Hymes, 1986; Johnson & Szczupakiewicz, 1987; McCroskey, 1982; Morreale, 1990; Rubin, 1982; Sypher, 1984). Equally important considerations in communication codes are the ability to use appropriate nonverbal behaviors such as gestures or facial expressions (Duran, 1989;

Table 29. Analysis of Variance — Group Communication

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Work on collaborative projects as a team	1.80	1.42	1.12	.2829
Motivate others to participate and work effectively as a team	2.26	.66	1.85	.7011
Understand and implement different methods of building consensus	2.44	1.74	1.80	.3813
Foster a sense of community between group members	2.71	1.85	2.08	.4134
Identify points of agreement and disagreement between communicators	2.59	2.21	1.68	.2699
Identify common purpose and interests of a group	2.53	2.05	1.76	.3143
Match people, interests, and tasks when coordinating a group project	2.98	.00	2.37	.9996
Recognize all members' roles in a small group	3.05	1.29	3.09	.6591
Allow others to take credit for achievement when appropriate	2.37	1.08	1.98	.5803
Generate conversation and discussion from quiet members of a group	3.15	3.59	2.50	.2398
Manage troublesome members in a group	2.97	3.55	2.54	.2497
Confront others effectively in appropriate contexts	2.86	.30	2.14	.8678
Set and manage realistic agendas	2.63	1.84	2.06	.4117
Lead meetings effectively	2.80	4.63	2.53	.1635
Keep group discussions relevant and focused	2.52	4.54	1.95	.0998
* Significant differences noted in TUKEY and Least Square Means				

Muchmore & Galvin, 1983; Parks, 1985; Ruben, 1976; Rubin, 1982; Spitzberg & Hurt, 1987; and Wiemann, 1977a, 1977b).

From a total of nine skills in this section, the respondents initially agreed on the importance of six abilities (see Table 30a). The most important skill was the use of pronunciation, grammar, and articulation appropriate to the designated audience. The next two skills were rated equally

Table 30a. Analysis of Variance — Communication Codes

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Use pronunciation, grammar, and articulation appropriate to the designated audience	1.83	1.15	1.39	.4402
Use appropriate vocal behaviors for the message and the audience	2.40	1.22	1.71	.4908
Use visual and other aids effectively to support ideas, motivate, and persuade others	2.80	.19	2.14	.9153
Speak publicly or in conversational settings without displaying extreme anxiety or nervousness	2.40	2.13	1.66	.2781
Focus without fear on speaker and message	2.59	1.81	1.73	.3533
Adapt to unanticipated changes in the setting in which communication takes place	3.07	5.69	2.48	.1033
Use appropriate nonverbal behaviors for the message and the audience	2.40	9.86	1.80	.0048*
Identify and respond appropriately to discrepancies between the speaker's verbal and nonverbal message	3.01	5.00	1.94	.0784*
Recognize nonverbal behaviors and respond appropriately	2.80	8.44	2.13	.0204*
SKILLS — ROUND 2				
Use appropriate nonverbal behaviors for the message and the audience	2.84	1.01	1.21	.4345
Identify and respond appropriately to discrepancies between the speaker's verbal and nonverbal message	3.03	2.69	1.24	.1170
Recognize nonverbal behaviors and respond appropriately	2.85	2.30	1.32	.1789
* Significant differences noted in TUKEY and Least Square Means				

important by the respondents. College graduates should use appropriate vocal behaviors for the message and audience. They should also speak publicly or in conversational settings without displaying extreme anxiety or nervousness. The remaining skills rated as important were using visual and other aids effectively to support ideas, motivate and persuade others along with focusing without fear on the message, and adapting to changes in the setting.

Faculty, employers, and policymakers disagreed about the importance of three skills (see Table 30b). The use of appropriate nonverbal behaviors was rated significantly more important by faculty and employers than by policymakers. Faculty rated significantly higher than did policymakers the abilities to recognize nonverbal behaviors and discrepancies between the verbal and nonverbal message. However, by the second round of surveys, the three groups agreed about the importance of *all* skills in this communication codes section (see Table 30a). Faculty particularly underscored the importance of using appropriate nonverbal behaviors. A professor notes, "Conservatively 60-65 percent of what we communicate is through nonverbal channels." "Nonverbal [communication] carries more weight and is more significant for listeners" according to an instructor. Another faculty member states that being attune to nonverbal behaviors is especially important for "intercultural encounters." A professor cautions that sensitivity to nonverbal [behaviors] is extremely important, but I'm afraid we may oversimplify its complexity by encouraging easy recognition."

In summary, after two rounds of surveys, the respondent groups agreed about the importance of using and understanding both spoken English and nonverbal signs or cues as well. The most important skill in this section was the use of pronunciation, grammar, and articulation appropriate to the designated audience. The lowest-ranked skill, although still considered important, was the ability to adapt to changes in the setting.

B.iv. Oral Message Evaluation

Many of the previous sections which presented important speech communication skills focused on the expressive abilities of college graduates. However, these graduates are also receivers of messages. College graduates' abilities to receive, process, and evaluate information from the environment and from other people are major factors that contribute to their ability to communicate effectively.

College graduates are surrounded by numerous stimuli in the workplace and as citizens in society. Their ability to select certain stimuli to use as information is necessary for successful communication. When reception occurs and an individual attends to the message or acts upon the information, then communication between people has occurred.

Listening is a significant communicative event (Larson et al., 1978). A considerable amount of time is spent in receiving messages rather than producing them. The listener has some control over the success of the message transfer between individuals as does the sender. Competent communication can be viewed as a "mutual process, engaged in by both the sender and the receiver, who share the responsibility for the creation of meaning in the interaction" (Larson et al., 1978, p. 48).

The way a person listens to another will affect the type of relationship that will develop between the listener and the speaker (Egan, 1970). An individual who listens in a superficial, closed or critical way will develop a very different relationship than a person who listens closely with an open mind is attentive and supportive to the speaker (Larson et al., 1978).

Table 30b. Disagreements about Communication Codes

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Use appropriate nonverbal behaviors for the message and the audience	2.41	2.18	3.00	n.s.	.0424	.0020
Standard Deviation	1.35	1.31	1.40			
Identify and respond appropriately to discrepancies between the speaker's verbal and nonverbal message	3.09	2.83	3.40	n.s.	n.s.	.0209
Standard Deviation	1.38	1.44	1.26			
Recognize nonverbal behaviors and respond appropriately	2.83	2.60	3.35	n.s.	n.s.	.0035
Standard Deviation	1.49	1.49	1.31			
EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant						

At the most basic level, listening requires that the speaker and other interactants understand words and phrases (Backlund et al., 1982; Bassett et al., 1978; Rubin, 1981, 1982). Listeners interpret messages on the basis of their own cognitive processes, goals, and needs. When accurate interpretation takes place, there is a common language between the speaker and listener. Listening is an active process where the receiver of the message selects various portions to seriously attend to or act upon. Since listening is a skill, it can be learned or improved upon in the educational process.

Listening also requires individuals to concentrate or understand, and effectively evaluate messages (Bienvenu, 1971; Carnevale et al., 1990; Cegala, 1981; Curtis et al., 1989; Di Salvo, 1980 and 1981; Di Salvo et al., 1976; Hanna, 1978; Hunsaker, 1989; Johnson & Szczupakiewicz, 1987; Rubin, 1984; Stanley & Shockley-Zalabak, 1985; Sypher, 1984; Witkin, 1973). In order to make judgments about messages, listeners need to use their critical thinking abilities to reach decisions. Effective listeners search for main ideas and critical supporting points, develop a sense of empathy and an awareness of biases both on the part of the speaker and listener, and decide which parts of the message to concentrate on and retain as well as which to discard (Hunsaker, 1989; Larson et al., 1978; Muchmore & Galvin, 1983).

Effective listeners respond to more than vocal cues. Listening involves the reception of data through many senses. Therefore, listening includes the ability of the receiver to respond to nonverbal cues as well.

In the final section of this instrument, faculty members, employers, and policymakers rated the importance of a variety of message evaluation skills. This section consisted of listening behaviors identified from the relevant literature discussed above. Basic levels of comprehension were explored as well as more sophisticated levels of critical thinking.

After the first round of surveys, the respondents reached a consensus about the importance of eight skills. They agreed that the two most important skills were the ability to listen attentively and with an open mind (see Table 31a). The next most valued skill was distinguishing facts from opinions. This latter result is consistent with the importance of reasoning as discussed by numerous scholars (e.g., Aitken & Neer, 1992; Bassett et al. 1978; Hirokawa & Pace, 1983; Hunsaker, 1989; and Rubin, 1982).

Faculty, employers, and policymakers also considered the abilities to identify important points when given oral instructions, to evaluate evidence, and to distinguish main points from supporting details as essential skills for college graduates. The lowest rated, yet important skill, was the ability to recognize sarcasm and irony.

Respondents disagreed about the importance of the six remaining skills. In all cases, faculty rated these skills as significantly more important than did employers (see Table 31b). Many of these skills were critical thinking abilities such as the analysis of assumptions, evidence, and conclusions; the detection and evaluation of bias or prejudice; and the evaluation of speeches on the basis of credibility of both the message and the speaker. Faculty disagreed with policymakers on two of the items—listening empathetically to help speakers clarify their thoughts and listening carefully to speakers with accents or impairments. In both cases, the faculty gave high ratings.

By the second round of surveys, the three groups of respondents reached an agreement about the importance of two additional skills. College graduates should be able to listen empathetically to help speakers clarify their thoughts or feelings. They should listen carefully to speakers with strongly accented or impaired speech, and they should recognize the speaker's purpose or goal. However, they disagreed about the importance of four skills.

Faculty rated significantly more important than did employers the ability to detect and evaluate bias and prejudice. Professors comments that this skill is "one of the primary skills in communication especially with the variety of people in the real world," and this is "important for work and *everyday* life." Another instructor wishes that *all* college graduates could do this while another faculty-member remarks that recognizing "individual bias is central and difficult for college graduates, particularly for community college students. One professor states "this takes experience and maturity often beyond the college grad years." Another instructor stresses that in community colleges, students only begin to learn this skill and it's not appropriate to expect them to be competent in this area. A professor concludes that students need more exposure and practice on learning this skill and criticizes the textbooks about speech as not covering this area. Since the textbooks are deficient in covering this skill, the instructor believes it should not be expected of college graduates. Few employers noted their responses

Table 31a. Analysis of Variance — Oral Message Evaluation

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Listen attentively	1.51	1.15	.72	.2046
Listen with an open mind	1.51	.70	.76	.3997
Identify important points when given oral instructions	1.97	1.90	.92	.1300
Distinguish main points from supporting details	2.14	3.60	1.61	.1098
Distinguish facts from opinions	1.75	.20	1.23	.8488
Evaluate ways in which speaker's ideas might be applied in new or different situations	2.17	2.27	2.01	.3252
Evaluate evidence on the basis of relevance, appropriateness, and adequacy	2.11	3.27	1.38	.0970
Recognize sarcasm and irony	2.78	3.08	2.13	.2381
Listen empathetically to help speaker clarify their thoughts and feelings	2.30	5.00	1.50	.0372*
Analyze assumptions, evidence, and conclusions of an argument	2.12	6.48	1.52	.0152*
Detect and evaluate bias and prejudice	2.03	6.03	1.36	.0132*
Evaluate speeches and messages on the basis of the credibility of both the speaker and his/her message	2.33	10.77	2.06	.0061*
Listen carefully to speakers with strongly accented or impaired speech	2.36	7.07	1.77	.0200*
Recognize speaker's purpose or goal	2.01	5.47	1.36	.0194*
SKILLS — ROUND 2				
Listen empathetically to help speakers clarify their thoughts and feelings	2.44	2.65	.98	.0704
Listen carefully to speakers with strongly accented or impaired speech	2.28	.74	.95	.4580

continued on next page

Table 31a. Continued

	Mean	Mean Square Model	Mean Square Error	Pr > F
Analyze assumptions, evidence, and conclusions of an argument	1.93	3.18	.65	.0085*
Detect and evaluate bias and prejudice	2.05	2.77	.82	.0360*
Evaluate speeches and messages on the basis of the credibility of both the speaker and his/her message	2.15	4.95	.84	.0034*
Recognize speaker's purpose or goal	2.01	1.58	.82	.1495*
* Significant differences noted in TUKEY and Least Square Means				

for the ratings they gave to these skills. One employer believes students are becoming sensitive to this area and notes the importance of it since "they will have to deal with less enlightened customers in the real world." Another employer comments that older employees who have more experience and are established within an organization are better prepared to detect and evaluate bias than new employees who are recent graduates.

Employers rated significantly lower than did policymakers and faculty the ability to analyze assumptions, evidence, and conclusions. The respondents wrote mostly positive comments in support of the importance of this skill. A professor states, "This is the heart and soul of critical thinking." "Critical thinking and listening is a valuable base for an assessment. Reasoning and analysis is a fundamental to the discussion" comments another faculty member. Other faculty believes this skill is essential to become better consumers, voters, parents, and employees. A policymaker also stresses the importance of analysis and questions "what could be more important in evaluating the merits of an argument." However, another faculty member believes this skill is too advanced for community college graduates and that they will have to learn these skills later. Policymakers rated the skill to recognize the speaker's goal as significantly more important for college graduates than did employers.

The final skill in this section where the respondents disagreed about its importance was the ability to evaluate speeches on the basis of credibility of both message and speaker. Employers rated this skill as significantly less important than did faculty and policymakers in their evaluations. A professor stresses this is of the "utmost importance," and another instructor comments this is a "high academic priority." The ability to evaluate credibility is "really necessary given the number of unethical speakers out there" according to a faculty member. Other respondents disagree about its importance. A professor remarks that "credibility is vastly overrated." Some employers believe that new employees or recent college graduates do not

Table 31b. Disagreements about Oral Message Evaluation

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Listen empathetically to help speakers clarify their thoughts and feelings	2.52	2.10	2.58	.0492	n.s.	.0511
Standard Deviation	1.31	1.13	1.34			
Analyze assumptions, evidence, and conclusions of an argument	2.53	1.93	2.13	.0146	n.s.	n.s.
Standard Deviation	1.60	1.00	1.28			
Detect and evaluate bias and prejudice	2.43	1.86	1.98	.0143	n.s.	n.s.
Standard Deviation	1.51	1.02	1.05			
Evaluate speeches and messages on the basis of the credibility of both the speaker and his/her message	2.85	2.09	2.30	.0062	n.s.	n.s.
Standard Deviation	1.77	1.35	1.14			
Listen carefully to speakers with strongly accented or impaired speech	2.62	2.12	2.68	.0386	n.s.	.0255
Standard Deviation	1.52	1.23	1.35			
Recognize speaker's purpose or goal	2.30	1.81	2.23	.0269	n.s.	n.s.
Standard Deviation	1.44	.99	1.23			
SKILLS — ROUND 2						
Analyze assumptions, evidence, and conclusions of an argument	2.27	1.82	1.80	.0228	.0305	n.s.
Standard Deviation	1.41	.65	.68			
Detect and evaluate bias and prejudice	2.37	1.93	1.97	.0369	n.s.	n.s.
Standard Deviation	1.16	.88	.57			
Evaluate speeches and messages on the basis of the credibility of both the speaker and his/her message	2.58	2.03	1.94	.0125	.0058	n.s.
Standard Deviation	1.20	.85	.68			
Recognize speaker's purpose or goal	2.17	2.03	1.76	n.s.	.0425	n.s.
Standard Deviation	1.00	.93	.70			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

Table 31c. Reliability of Items in Speech Communication Survey

Sections	Number of Items	Alpha
Basic speech communication skills	41	.9571
General	6	.7096
Message development/organization	9	.8818
Context and situation analysis	6	.9302
Message support	15	.9121
Message type	5	.7910
Interpersonal and group communication	58	.9749
Situation analysis	11	.8970
Relationship management	11	.8813
Information exchange	8	.8879
Conversation management	13	.9218
Group Communication	15	.9540
Communication Codes	9	.9182
Oral message evaluation	14	.9327
Total speech communication survey	122	.9852

posses this skill while a few employers do not believe college graduates need this particular skill for entry-level positions.

The evaluations of oral messages and their effects are very important skills according to the respondents. They agreed about the importance of ten sub-skills related to listening behaviors and evaluation. The two most highly related skills of extreme importance were listening attentively and with an open mind. Overall, the respondents believed that many of these critical thinking skills are essential for college graduates to become effective listeners in work and society.

B.v. Reliability

The results of the reliability analysis for the speech communication goals inventory is presented in Table 31c. The interpersonal and group communication section had the highest reliability (a = .97) while the communication codes section had the lowest reliability (a = .92).

In the basic speech communication section, the subsection of general skills had the lowest reliability (a = .71) while the context and situation analysis subsection had the highest reliability (a = .93). In the interpersonal and group communication section, the conversation management subsection had the highest reliability (a = .95) while the relationship management section had the lowest reliability (a = .88). Overall, the reliability of individual sections and subsections tended to increase with the number of items comprising a given unit. The majority of reliability coefficients were above a = .80.

B.vi. Factor Analysis

The items in the speech communication survey were further analyzed by conducting a principle components factor analysis with varimax rotation. In the speech area, 12 factors were extracted since the original conceptualization consisted of 12 dimensions that were believed to account for the speech communication variables. The rotated factor matrix is illustrated in Tables 32a through 32e

Many of the variables from the "interpersonal and group communication" section loaded most heavily on Factor 1. Specifically, the majority of items in the subsections of "relationship and conversation management" comprised Factor 1. These skills included disclosing appropriate information and describing or expressing feelings when appropriate. The skills related to adaptation also were in Factor 1. These adaptive skills included adjusting to time constraints, unanticipated changes in the setting, and the needs or desires of other communicators. In addition, three of the 11 items in the subsection "situation analysis" appeared in Factor 1. These related to the speaker's adaptive skills. None of the skills from the "group communication" subsection loaded onto Factor 1. This factor accounted for approximately 14 percent of the variance.

Factor 2 accounted for 11 percent of the variance. The majority of items in this factor were from the "group communication" subsection. These skills related to the college graduates ability to manage and develop groups.

Factor 3 accounted for eight percent of the variance. Two subsections from "basic speech communication" skills dominated this factor. The "context and situation analysis" and the "message type" were prevalent. These skills included choosing and narrowing or broadening a topic, preparing and adapting the message to the particular context, and delivering certain kinds of speeches such as an informative presentation.

Factors 4 through 6 each accounted for seven percent of the variance. Factor 4 consisted of listening skills primarily from the "oral message evaluation" section. These skills included listening attentively and with an open mind as well as identifying important points when given oral instructions. Factor 5 is comprised of mainly the advanced critical thinking abilities required to evaluate messages. The abilities to analyze assumptions, evaluate the credibility of speakers, distinguish facts from opinions, and detecting bias or prejudice were contained in

Table 32a. Speech Goals Survey — Factor Analysis — Factors 1 and 2

Goals	Factor 1
Motivate others to disclose information when appropriate	.69885
Interrupt effectively when appropriate and possible	.68570
Disclose appropriate information about themselves when relevant	.66781
Begin and end a conversation in an appropriate manner	.64913
Describe or express feelings to others when appropriate	.63742
Introduce new topics when appropriate	.62488
Recognize when it is appropriate to schedule/participate in a meeting	.62447
Adjust to factors that might inhibit effective communication	.61795
Break-off non-constructive relationships when appropriate	.61569
Sustain topics and discussion and offer follow-up comments	.60014
Use humor when appropriate	.59121
Give and receive compliments gracefully	.57930
Describe or express feelings to others when appropriate	.57281
Paraphrase or restate what speaker has said to confirm his/her meaning	.56309
Understand status and relationship between communicators	.54584
Convey empathy when communicating	.53085
Have confidence to approach and engage in conversation	.52541
Adapt to unanticipated changes in the setting	.51826
Recognize and adapt to time constraints	.51799
Reduce barriers or interference that may inhibit communication	.49938
Identify and adapt to the needs or desires of other communicators	.46946
Listen empathetically	.44886
Give concise and accurate directions	.41637
Conduct and participate in an interview	.38769
Speak publicly or in conversational settings without displaying anxiety	.36424
Percent of variance accounted for by factor	14.32

Goals	Factor 2
Understand and implement different methods of building consensus	.75092
Motivate others to participate and work effectively as a team	.73935
Match people, interests, and tasks when coordinating a group project	.73245
Manage troublesome members in a group	.69619
Identify common purpose and interests of a group	.68800
Generate conversation and discussion from quiet group members	.68098
Lead meetings effectively	.66806
Identify points of agreement and disagreement between communicators	.65454
Foster a sense of community between group members	.64764
Confront others effectively in appropriate contexts	.64435
Recognize all members' roles in a small group	.63412
Allow others to take credit for achievement when appropriate	.63313
Keep group discussions relevant and focused	.62612
Set and manage realistic agendas	.58288
Give bad news to others with empathy	.50462
Work on collaborative projects as a team	.49481
Build and maintain constructive relationships	.43858
Percent of variance accounted for by factor	11.22

Table 32b. Speech Goals Survey — Factor Analysis — Factors 3 and 4

Goals	Factor 3	Goal	Factor 4
Adapt to changes in audience characteristics	.76867	Listen with an open mind	.75210
Choose and narrow a topic	.72685	Listen attentively	.67939
Choose and broaden a topic	.69348	Be open-minded about another's point of view	.66301
Prepare a message and adapt /make changes to the physical setting	.64132	Allow others to express different views	.61393
Deliver an impromptu or extemporaneous talk	.58326	Recognize speaker's purpose or goal	.48869
Prepare and adapt communication style to the context and situation	.58303	Listen attentively to questions and comments	.47154
Develop messages that influence attitudes, beliefs, and actions	.56518	Identify important points when giving oral instructions	.40715
Compose and deliver an entertainment-oriented speech	.51899	Listen carefully to speakers with accented or impaired speech	.40319
Understand their roles in a variety of settings	.49787	Focus without fear on speaker and message	.32321
Compose and deliver an informative speech	.49595	Use visual and other aids to support ideas, motivate, and persuade others	.30673
Develop and present an interesting and attention-getting introduction	.48198		
Use motivational appeals that build on values, expectations, and needs	.43038		
Incorporate language which stimulates audience interest	.41370		
Percent of variance accounted for by factor	8.28	Percent of variance accounted for by factor	7.07

this factor. Factor 6 consisted of mainly items from the "basic speech communication" skills section. These skills included stating ideas clearly, identifying and accomplishing communication goals, outlining key points, and using appropriate and effective organizing methods for the message.

Factors 7 and 8 each accounted for six percent of the variance. The majority of the "message support" items loaded onto Factor 7 while many of the "relationship management" items loaded onto Factor 8. Factors 9 through 12 each accounted for less than five percent of the variance.

Table 32c. Speech Goals Survey — Factor Analysis — Factors 5 and 6

Goals	Factor 5	Goals	Factor 6
Detect and evaluate bias and prejudice	.74313	Accomplish their communication goals	.67301
Evaluate the relevance, adequacy, and appropriateness of evidence	.71045	Structure a message with an introduction, main points, etc.	.67094
Analyze assumptions, evidence, and conclusions of an argument	.70714	Choose appropriate and effective organizing methods for message	.64406
Evaluate the credibility of speakers and their messages	.64988	Select the most appropriate and effective medium	.58522
Distinguish facts from opinions	.58957	Identify their communication goals	.53947
Evaluate ways in which ideas might be applied in different situations	.56488	Use summary statements in appropriate contexts	.53147
Distinguish main points from supporting details	.55268	State ideas clearly	.47578
Recognize sarcasm and irony	.53166	Communicate candidly	.47418
		Outline key points and sub-points	.46763
		Use pronunciation, grammar, and articulation appropriate to audience	.45515
		Recognize when it is appropriate to communicate	.45482
		Choose topic about which they are comfortable and knowledgeable	.42172
Percent of variance accounted for by factor	7.07	Percent of variance accounted for by factor	7.00

This factor analysis illustrated that many of the variables loaded onto a factor were originally grouped within the survey. Many of the relationship and conversation management skills were interrelated and appeared in one factor suggesting that there was not a need for two separate subsections. Many of the group communication items loaded onto a single factor while we had integrated this area with interpersonal communication. Group communication could be considered as a separate topic that warrants further elaboration.

Twelve factors are not necessary to define speech communication given the results from this analysis. Relationships and conversation management could be combined together as well as situation analysis and information exchange.

Table 32d. Speech Goals Survey — Factor Analysis — Factors 7 and 8

Goals	Factor 7	Goal	Factor 8
Support arguments with relevant and adequate evidence	.67921	Ask questions effectively	.39146
Identify facts, issues, and problems relevant to the topic	.63786	Manage conflict	.64958
Research effectively information required for message preparation	.58630	Identify and use appropriate statistics to support the message	.58155
Identify and manage misunderstandings	.55205	Effectively assert themselves	.53193
Incorporate information from a variety of sources	.54497	Cope with negative feedback	.51610
Support message by incorporating statements of others	.52343	Respond appropriately to feedback	.50717
Provide appropriate supporting material given the constraints	.50748	Give feedback appropriately	.46494
Recognize and be able to use basic reasoning	.49984	Manage multiple communication goals effectively	.46396
Demonstrate credibility	.47465	Recognize when another does not understand their message	.43731
State intentions and purposes when appropriate	.43135	Negotiate effectively	.42199
Demonstrate competence and comfort with information	.40666	Ask questions when they do not understand another's message	.41092
		Answer questions concisely and to the point or issue	.37927
Percent of variance accounted for by factor	6.16	Percent of variance accounted for by factor	5.70

B.vii. Summary

Faculty, employers, and policymakers judged a large array of speech communication skills. After two rounds of surveys, the entire group agreed about the importance of many skills. In the areas of information exchange, conversation management, and group communication, the three groups reached a consensus about all of these skills. In a similar manner, they also agreed about the importance of all skills relating to using and understanding spoken English and non-verbal signs considered as "communication codes" (see Table 33).

Table 32e. Speech Goals Survey — Factor Analysis — Factors 9 through 12

Goals	Factor 9	Goals	Factor 10
Use appropriate nonverbal behaviors	.62871	Be aware of language indicating bias on gender, age, ethnicity, etc.	.52688
Convey enthusiasm for topic through delivery	.57675	Understand the influence of culture on language	.50393
Use appropriate vocal behaviors	.53885	Accept responsibility for their own communication behavior	.45595
Demonstrate attentiveness through nonverbal and verbal behaviors	.53348	Understand and value differences in communication styles	.43496
Recognize nonverbal behaviors and respond appropriately	.50719	Communicate ethically	.38506
Identify and respond to discrepancies between verbal and nonverbal message	.48350	Make effective decisions during communication situations	.38461
Percent of variance accounted for by factor	4.48	Percent of variance accounted for by factor	3.60
Goals	Factor 11	Goal	Factor 12
Use stories and anecdotes when I appropriate	.49698	Recognize when it is in appropriate to speak	.45726
Percent of variance accounted for by factor	2.56	Percent of variance accounted for by factor	2.34

Faculty tended to value the importance of preparing students for both public speaking roles as well as interpersonal communication roles. Therefore, the faculty rated significantly higher than did the employers the skills of composing and delivering an informative speech and presenting and interesting, and attention-getting introduction. Employers believed that formal public speaking was not relevant for many of their employees in the workplace. However, there were certain relationship management skills that employers rated higher than professors. These skills included building and maintaining constructive relationships with superiors, peers, and subordinates; coping with negative feedback; and motivating others to disclose information when appropriate. Employers viewed these skills as being extremely important for employees to develop especially within the context of working with teams of diverse individuals.

In terms of the development and organization of a message, policymakers rated significantly higher than did faculty and employers the importance of choosing a topic with which the speaker is knowledgeable and comfortable. The identification of communication goals by the speaker was rated significantly higher by the faculty than the judgements of employers and policymakers. Both of these skills require the speaker to have some freedom to make decisions

Table 33. Summary of Consensus & Disagreements in Each Section of Speech Communication Survey

Section of Survey	Round 1 — Number of Items				Round 2 — Number of Items				Final — Number of Items			
	A	%	D	%	A	%	D	%	A	%	D	%
Basic Speech												
Communication Skills	19	46.3	22	53.7	14	63.6	8	36.4	33	80.5	8	19.5
General	4	66.7	2	33.3	2	100.0	0	00.0	6	100.0	0	00.0
Message Development and Organization	4	44.4	5	55.6	2	40.0	3	60.0	6	66.7	3	33.3
Context and Situation Analysis	0	00.0	6	100.0	4	66.7	2	33.3	4	66.7	2	33.3
Message Support	10	66.7	5	33.3	3	60.0	2	40.0	13	86.7	2	13.3
Message Type	1	20.0	4	80.0	3	75.0	1	25.0	4	80.0	1	20.0
Interpersonal and Group												
Communication	38	65.5	20	34.5	16	80.0	4	20.0	54	93.1	4	16.9
Situation Analysis	7	63.7	4	36.3	3	75.0	1	25.0	10	90.9	1	9.1
Relationship Management	2	18.2	9	81.8	6	66.7	3	33.3	8	72.7	3	27.3
Information Exchange	5	62.5	3	37.5	3	100.0	0	00.0	8	100.0	0	00.0
Conversation Management	9	69.2	4	30.8	4	100.0	0	00.0	13	100.0	0	00.0
Group Communication	15	100.0	0	00.0	—	—	—	—	15	100.0	0	00.0
Communication Codes	6	66.7	3	33.3	3	100.0	0	00.0	9	100.0	0	00.0
Oral Message Evaluation	8	57.1	6	42.9	2	33.3	4	66.7	10	71.4	4	28.6
TOTAL	71	58.2	51	41.8	35	68.6	16	31.4	106	86.9	16	13.1

A = Number of Items for which there was agreement; D = Number of Items for which there was disagreement

about their own presentations. Employers strongly asserted that employees have little control over what particular topics they will speak about with their audiences. Often employees are told what their communication goals will be and are required to speak about certain topics as mandated by their supervisors. In a similar manner, employers believed that college graduates only need to understand their roles in the current workplace setting rather than multiple or diverse contexts. They also considered the preparation and adaptation of the speaker's style to various contexts as less important than did the faculty members. Both policymakers and

employers thought that the ability to adapt messages was contingent upon employees gaining substantial experience in the workplace.

The faculty rated significantly higher than did employers and policymakers the skills of providing appropriate supporting material based on the audience, occasion, and purpose as well as supporting messages by incorporating statements of other into the speaker's statements. Faculty viewed these skills as critical to the development of effective communicators. However, employers and policymakers thought that both of these skills were too advanced to expect from college graduates.

In terms of the skills associated with effective evaluations of oral messages, there were additional disagreements about the importance of four skills. Employers rated significantly lower than did faculty and policymakers the ability to analyze assumptions, evidence, and conclusions of an argument. They also believed that the skills of detecting bias and prejudice were not developed in college as well as recognizing the speaker's purpose or goal and the ability to evaluate a message on the basis of the credibility of both the speaker and the actual presentation. While employers valued these skills, they believed that these evaluation skills were too advanced for college graduates to achieve. There was an expectation that through experience in the workplace and in society that employees would become more competent.

Overall, the three respondent groups agreed about importance of the majority of speech communication skills. They only disagreed with about one-tenth of the items. In most cases, these disagreements existed because either employers or policymakers believed that certain skills were too advanced to expect from college graduates.

B.vii.b. Advanced Communication Skills

There were a variety of communication skills that the respondent groups agreed were important for college graduates to achieve. These skills ranged from very basic competencies to more advanced levels. The respondent groups viewed the basic skills as critical to providing a foundation that was necessary to progress to higher levels of achievement. These basic skills are the minimal levels of communication functioning that are necessary for college graduates to attain. Examples of basic skills include using summary statements, selecting an effective medium for communicating, using appropriate pronunciation, grammar, and articulation, and structuring a message with key features such as an introduction, main points, useful transitions, and a conclusion.

Most of the advanced speech communication skills are linked with critical thinking and require reasoning skills. In order to communicate effectively, college graduates need to speak or listen in "such a way that certain desirable outcomes are enhanced or facilitated" (Larson et al., 1978, p. 10). While the basic skills may be viewed as competencies necessary for minimal levels of performance, advanced cognitive knowledge is required. College graduates must possess both skills and knowledge in order to make decisions about appropriate

communication behaviors. These decisions require the speaker or listener to be aware and understand the relationships between people involved in the communication. Furthermore, in order to determine what is appropriate in a given situation, college graduates need to understand the norms of the culture or the particular organization as well as the group norms which provide guidance about the acceptable usage of language as well as ways to communicate in specific relationships. College graduates need to make a wide range of judgements as they prepare formal speeches, communicate in small groups and working teams, or listen to messages.

College graduates with advanced skills are able to effectively analyze the situation or context within which they must develop their message. They clearly understand their roles and can adapt to changes in their audiences. College graduates are also able to consider both their audience, the context, and the purpose of their message as they prepare their communication.

College graduates synthesize information from a variety of sources to support their message and to demonstrate credibility by choosing appropriate material to support their arguments or claims. They also identify the facts, issues, or problems relevant to the particular topic. College graduates employ advanced skills when they use reasoning to draw conclusions from general information or extrapolate general conclusions from specific information. Some communicators seek to deliver more than information. They may compose and deliver a speech or message to influence others' attitudes or beliefs.

College graduates also need to interact effectively with other people. The development and management of human relations requires advanced thinking skills. College graduates with advanced abilities identify and adapt to the perceived needs and desires of other communicators. They make effective decisions during the communication situation. College graduates as new employees build and maintain constructive relationships with their superiors, peers, and subordinates in the workplace. They also understand and value differences in communication styles. They manage conflict and convey empathy when communicating. As college graduates work in groups or teams, they collaborate effectively with others and learn to be interdependent. They motivate others to participate and understand different methods of building consensus. College graduates who facilitate group communication can foster a sense of community between group members and generate conversation from quiet members.

College graduates are also the receivers of many messages, presentations, or other communication acts. In these situations, they employ listening skills that also require reasoning to make evaluations about the communications. College graduate with advanced skills effectively distinguish facts from opinions and main points from supporting details. They evaluate the ways in which the speaker's ideas might be applied in new or different situations. They also evaluate evidence on the basis of relevancy, appropriateness, and adequacy. They assess the credibility of speaker and the message.

College graduates who learn or develop basic speech communication skills as well as advanced reasoning abilities are effective communicators. They attain their communication goals. They can also effectively evaluate messages and effectively interact with other people.

Advanced skills in both writing and speech communication require the development of reasoning skills. These links with critical thinking have been highlighted in the summaries of our findings. We also developed and conducted a separate survey which focuses in more detail on critical thinking.

C. Critical Thinking Skills

C.i. Interpretation Skills

Interpretation is considered to be an important ability for college graduates to achieve (Facione, 1990; Paul & Nosich, 1991). This skill involves understanding and expressing the meaning and significance of a variety of communications.

C.i.a. Interpretation Skills - Categorizing

Within this broad category of interpretation, the ability to categorize information is critical (Facione, 1990; Marzano et al., 1988). The results from the initial Delphi study indicated there was an agreement about all items in the categorization section (see Table 34). All three stakeholder groups believed that college graduates should be able to make comparisons by noting similarities and differences between or among informational items. This extremely important skill was followed by the ability to formulate categories, distinctions, or frameworks to organize information in such a manner to aid comprehension. The ability to classify and group data, findings, and opinions on the basis of their attributes or a given criterion was also rated as extremely important. The next skill, translating information from one medium to another to aid comprehension without altering the intended meaning, was also rated as extremely important.

C.i.b. Interpretation Skills - Detecting Indirect Persuasion

Another essential group of abilities are in the area of detecting indirect persuasion. A good critical thinker should be able to understand the underlying motives contained or expressed in language or other communication systems such as social behaviors. This ability is similar to Facione's (1990) "decoding significance" category which we originally used in our survey. However, focus group members, in particular, believed Facione's term was an academic term that they did not readily understand. Therefore, we changed the term to "detecting indirect persuasion." The ideal goal is that students with this skill can detect and describe the content and affective intentions and purposes expressed in communication. After the first survey, the stakeholder groups disagreed about the importance of every item in this subsection (see Table 35a). Faculty rated these skills significantly higher than did either the policymaker or employer groups. The one exception was in the area of detecting "if, then" statements based

Table 34. Analysis of Variance — Interpretation Skills — Categorizing

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Formulate categories, distinctions, or frameworks to organize information in such a manner to aid comprehension	2.00	.66	1.40	.6238
Translate information from one medium to another to aid comprehension without altering the intended meaning	2.54	2.49	1.75	.2434
Make comparisons; note similarities and differences between or among informational items	1.94	1.76	1.09	.2016
Classify and group data, findings, and opinions on the basis of attributes or a given criterion	2.24	1.01	1.56	.5239
* Significant differences noted in TUKEY and Least Square Means				

on a false assumption. The policymakers rated this skill higher than faculty and as significantly more important than the employers' evaluations (see Table 35b).

After the second round of surveys, the three groups reached a consensus about four skills. College graduates should be able to detect the use of leading questions that are biased towards eliciting a preferred response. They should recognize the use of misleading language such as language that exaggerates or downplays the importance of something or neutralizes a controversial topic. College graduates should also recognize the use of slanted definitions or comparisons which express a bias for or against a position. Furthermore, college graduates should detect instances where irrelevant topics or consideration are brought into an argument that divert attention from the original issue. These four skills tended to be rated as extremely important.

The respondents disagreed about two remaining skill areas. Faculty rated significantly higher than did employers and policymakers the ability to detect the use of strong emotional language or imagery which is intended to trigger a response in an audience (see Table 35b). A professor states, "Strong emotional language is the basis for political rhetoric. It could lead people astray." Another professor remarks, "One cannot assess reasons unless one can identify emotional language and set it aside." Other faculty concur and note, "Emotive language and imagery are among the pitfalls to effective reasoning," and this skill is "necessary for evaluating persuasive appeals in politics and advertising." Another faculty member in a

Table 35a. Analysis of Variance — Interpretation Skills — Detecting Indirect Persuasion

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Detect the use of strong emotional language or imagery which is intended to trigger a response in an audience	2.61	22.52	2.60	.0003*
Detect the use of leading questions that are biased towards eliciting a preferred response	2.36	13.20	2.15	.0026*
Detect "if, then" statements based on the false assumption that if the antecedent is true, so must be the consequence	2.41	5.83	2.08	.0637*
Recognize the use of misleading language	2.36	9.27	2.08	.0129*
Detect instances where irrelevant topics or considerations are brought into an argument that divert attention from the original issue	2.51	10.22	1.79	.0040*
Recognize the use of slanted definitions or comparisons which express a bias for or against a position	2.46	12.59	2.09	.0029*
SKILLS — ROUND 2				
Detect the use of strong emotional language or imagery which is intended to trigger a response in an audience	2.58	8.86	1.51	.0036*
Detect "if, then" statements based on the false assumption that if the antecedent is true, so must be the consequence	2.34	2.35	1.51	.2150*
Detect the use of leading questions that are biased towards eliciting a preferred response	2.18	.89	.87	.3615
Recognize the use of misleading language	2.21	.51	1.01	.6039
Detect instances where irrelevant topics or considerations are brought into an argument that divert attention from the original issue	2.59	2.07	1.27	.1990
Recognize the use of slanted definitions or comparisons which express a bias for or against a position	2.44	1.34	.74	.1695
* Significant differences noted in TUKEY and Least Square Means				

Table 35b. Disagreements about Detecting Indirect Persuasion

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Detect the use of strong emotional language or imagery which is intended to trigger a response in an audience	3.48	2.27	2.67	.0002	.0377	n.s.
Standard Deviation	1.76	1.53	1.62			
Detect the use of leading questions that are biased towards eliciting a preferred response	3.05	2.12	2.28	.0029	.0425	n.s.
Standard Deviation	1.75	1.32	1.54			
Detect "if, then" statements based on the false assumption that if the antecedent is true, so must be the consequence	2.83	2.36	2.08	n.s.	.0266	n.s.
Standard Deviation	1.65	1.41	1.27			
Recognize the use of misleading language	2.93	2.15	2.36	.0089	n.s.	n.s.
Standard Deviation	1.66	1.41	1.27			
Detect instances where irrelevant topics or considerations are brought into an argument that divert attention from the original issue	3.00	2.25	2.78	.0096	n.s.	.0402
Standard Deviation	1.67	1.19	1.35			
Recognize the use of slanted definitions or comparisons which express a bias for or against a position	3.12	2.21	2.44	.0041	n.s.	n.s.
Standard Deviation	1.80	1.31	1.38			
SKILLS — ROUND 2						
Detect the use of strong emotional language or imagery which is intended to trigger a response in an audience	3.12	2.32	2.86	.0038	n.s.	.04141
Standard Deviation	1.34	1.23	1.01			

continued on next page

Table 35b. Continued

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
Detect "if, then" statements based on the false assumption that if the antecedent is true, so must be the consequence	2.39	2.43	1.90	n.s.	.0237	.0080
Standard Deviation	1.00	1.41	.54			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

professional field emphasizes, "I am basing this on my profession and program, occupational therapy, wherein working with patients and clients of all ages and disabilities, this is a very important skill." Some faculty members stress how difficult it is to teach students to recognize strong emotional language. Some professors believe it is very difficult for college graduates to make such detections. A professor concludes, "Students don't recognize facts from opinions."

Other employers and policymakers disagree about the importance of this skill. An employer notes, "This kind of persuasion is not normal in business decision making." Although, another employer remarks, "As the ocean of new facts and information grows more quickly than our ability to assimilate this information, it seems we are more susceptible to 'trigger' mechanisms in lieu of having facts to challenges statements with. I think knowing what these triggers are becomes increasingly important as the glut of information increases." Several policymakers do not consider this skill to be important. Some emphasize the understanding of content as the most important ability.

Policymakers rated significantly higher than did both faculty and employers the importance of detecting "if, then" statements based on false assumptions (see Table 35b). Several faculty members note a difficulty in understanding what this particular item meant. However, some faculty advocate its extreme importance. They state this is a "basic form of reasoning" and "as our society becomes more legalistic- as it surely is - these abilities become crucial." Another professor remarks, "A graduate who has gone through a logic course as I expect, should be able to have this skills. These are simple skills but very important for adequate function at this level." Another professor counters, "It is nice if people are able to recognize verbal manipulation, but not essential in all areas of life and work." A policymaker stresses this skill is "more meaningful to college graduates beyond the two-year associate degree." "In today's world of sound bites, playing upon existing assumptions and prejudices can go undetected unless people have learned to take the time to examine critically the linkages in messages and arguments" states another policymaker. Overall, faculty view this skill as more basic and fundamental, which may in part explain why it received a lower rating. Policymakers view this as an important skill that should be developed further in college.

Table 36a. Analysis of Variance — Interpretation Skills — Clarifying Meaning

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Recognize confusing, vague or ambiguous language that requires clarification to increase comprehension	2.23	.81	1.45	.5727
Ask relevant and penetrating questions to clarify facts, concepts, and relationships	1.82	1.87	1.33	.2480
Identify and seek additional resources, such as resources in print, that can help clarify communication	2.22	1.53	1.45	.3508
Develop analogies and other forms of comparisons to clarify meaning	2.73	4.06	1.88	.1176
Recognize contradictions and inconsistencies in written or verbal language, data, images, or symbols	2.01	4.24	1.17	.0288*
Provide an example that helps to explain something or removes a troublesome ambiguity	2.40	5.19	1.38	.0250*
SKILLS — ROUND 2				
Provide an example that helps to explain something or removes a troublesome ambiguity	2.05	.22	.59	.6859
Recognize contradictions and inconsistencies in written or verbal language, data, images, or symbols	1.91	1.58	.52	.0493*
* Significant differences noted in TUKEY and Least Square Means				

C.i.c. Interpretation Skills — Clarifying Meaning

In the final subsection, participants were asked to evaluate the importance of clarifying meaning. College graduates should have the ability to paraphrase or make clear the meaning of words, issues, conclusions, or beliefs (Halpern, 1992; Paul & Nosich, 1991). This skill includes the removal of confusing or ambiguous language (Facione, 1990). In order to achieve this goal, students need to identify and seek out specific resources to aid in obtaining the necessary information (Marzano et al., 1988). After the first round of surveys, the participants agreed that four skills were extremely important (see Table 36a). College graduates should be able to recognize confusing, vague language that requires clarification to increase comprehension; ask relevant and penetrating questions to clarify facts, concepts, and

Table 36b. Disagreements about Clarifying Meaning

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Recognize contradictions and inconsistencies in written or verbal language, data, images, or symbols	2.21	1.83	2.31	n.s.	n.s.	.0367
Standard Deviation	1.12	1.03	1.19			
Provide an example that helps to explain something or removes a troublesome ambiguity	2.81	2.23	2.44	.0074	n.s.	n.s.
Standard Deviation	1.17	1.13	1.19			
SKILLS — ROUND 2						
Recognize contradictions and inconsistencies in written or verbal language, data, images, or symbols	2.16	1.80	2.00	.0147	n.s.	n.s.
Standard Deviation	.68	.70	.84			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

relationships; identify and seek additional resources, such as resources in print, that can help clarify communication; and develop analogies and other forms of comparisons to clarify meaning. After the second survey, a consensus was reached about one additional item that was rated as extremely important. College graduates should be able to provide an example that helps to explain something or remove a troublesome ambiguity.

Faculty, employers, and policymakers disagreed about the importance of one item—should college graduates be able to recognize contradictions or inconsistencies in written or verbal language, data, images, or symbols? Faculty viewed this skill as extremely important and rated it significantly higher than employers did (see Table 36b). Faculty state, "Inconsistency/ contradiction indicates unclarity; to think critically, one must think clearly," and "If one cannot recognize contradictions, then he or she can't reason." Policymakers tend to agree. They remark, "With the plethora of data and noise, the ability to take apart seemingly logical arguments and to bring clarity to masses of data [is] critical," and "Graduates must be discriminating readers." This skill is "of more importance to more mature graduates beyond the associate degree" remarks another policymaker. However, some faculty view this as a basic skill that is fundamental to successful critical thinkers. Employers did not note reasons for their differences in perspectives.

Table 37a. Analysis of Variance — Analysis Skills — Examining Ideas and Purpose

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Recognize the relationship between the purpose(s) of a communication and the problems or issues that must be resolved in achieving that purpose	2.52	2.10	1.84	.3204
Assess the constraints on the practical applications of an idea	2.89	1.97	1.91	.5359
Identify the ideas presented and assess the interests, attitudes, or views contained in those ideas	2.14	5.66	1.50	.0248*
Identify the stated, implied, or undeclared purpose(s) of a communication	2.35	7.68	1.60	.0092*
SKILLS — ROUND 2				
Identify the ideas presented and assess the interests, attitudes, or views contained in those ideas	2.02	1.04	1.10	.3910
Identify the stated, implied, or undeclared purpose(s) of a communication	2.00	2.13	.80	.0718*
* Significant differences noted in TUKEY and Least Square Means				

C.ii. Analysis Skills

Most scholars believe that the ability to identify the explicit and implicit features of a communication, especially in arguments that put forth a conclusion are critical skills (Facione, 1990). The term argument is used to describe any form of thinking in which reasons are offered in support of a conclusion. Students should be able to discuss ideas in a manner that explores supporting and opposing points of views and try to increase understanding instead of just winning the argument (Chaffee, 1990).

C.ii.a. Analysis Skills — Examining Ideas and Purpose

One major area of analysis is to examine ideas and purposes (Facione, 1990). Here the three stakeholder groups agreed that two skills were approaching medium importance (see Table 37a). College graduates should be able to recognize the relationship between the purposes of a communication and the problems or issues that must be resolved in achieving those purposes

Table 37b. Disagreements about Examining Ideas and Purpose

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Identify the ideas presented and assess the interests, attitudes, or views contained in those ideas	2.60	2.01	2.00	.0223	.0391	n.s.
Standard Deviation	1.45	1.19	1.03			
Identify the stated, implied, or undeclared purpose(s) of a communication	2.86	2.15	2.39	.0098	n.s.	n.s.
Standard Deviation	1.55	1.19	1.10			
SKILLS — ROUND 2						
Identify the stated, implied, or undeclared purpose(s) of a communication	2.27	1.97	1.71	n.s.	.0056	n.s.
Standard Deviation	.94	.94	.46			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

and should assess the constraints on the practical applications of an idea. After the second round of surveys, one additional skill was agreed upon—college graduates should be able to identify the ideas presented and assess the interests, attitudes, or views contained in those ideas. This skill was rated as extremely important.

The three groups disagreed about the importance of whether college graduates should be able to identify the stated, implied, or undeclared purpose(s) of a communication (see Table 37b). Policymakers rated this skill significantly higher than did employers. Very few statements were written to express the differences in participants' views. Faculty noted that this skill is difficult for college graduates to learn. This skill "requires students to be more analytical which is necessary today," and "Reading between lines of communication is very important." However, another faculty member believes that "stated purposes are extremely important while implied or undeclared [purposes are] less important." This skill is "necessary for reading content-not just words" comments an instructor. A policymaker states, "Understanding what a communication is trying to accomplish is key to all other evaluations and action consequences." An employer emphasizes that "health care has a language that implies more than is stated frequently." Another manager notes, "These areas are crucial. Communication is the center of our business." Some employers believe that this skill requires experience that new college graduates do not possess.

Table 38a. Analysis of Variance — Detecting and Analyzing Arguments

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Examine a communication and determine whether or not it expresses a reason(s) in support of or in opposition to some conclusion, opinion, or point of view	2.02	12.90	1.39	.0001*
Identify the main conclusion of an argument	1.57	9.20	.84	.0001*
Determine if the conclusion is supported with reasons and identify those that are stated or implied	1.72	10.94	1.03	.0001*
Identify the background information provided to explain reasons which support a conclusion	2.41	4.14	1.38	.0525*
Identify the unstated assumptions of an argument	2.433	6.04	1.72	.0321*
SKILLS — ROUND 2				
Identify the background information provided to explain reasons which support a conclusion	2.63	.50	.65	.4672
Identify the unstated assumptions of an argument	2.54	3.22	1.17	.0676
Examine a communication and determine whether or not it expresses a reason(s) in support of or in opposition to some conclusion, opinion, or point of view	1.89	3.32	.58	.0042*
Identify the main conclusion of an argument	1.57	1.81	.34	.0057*
Determine if the conclusion is supported with reasons and identify those that are stated or implied	1.82	4.00	.69	.0038*
* Significant differences noted in TUKEY and Least Square Means				

C.ii.b. Analysis Skills — Detecting and Analyzing Arguments

An equally important skill is detecting and analyzing arguments. After the first round of surveys, there was no agreement about the importance of these items (see Table 38a). After the second round of surveys, there was agreement in two areas: college graduates should be able to identify the background information provided to explain reasons which support a conclusion and should be able to identify the unstated assumptions of an argument. However, the respondents continued to disagree about the importance of three skills.

Faculty rated significantly higher than did employers the ability to identify the main conclusion of an argument and to determine if a conclusion is supported with stated or implied reasons (see Table 38b). In terms of identifying the main conclusion of an argument, faculty remarked that it is the "most significant task of education," "if one doesn't know the intended conclusion, one cannot assess an argument," and it is "essential to the process—otherwise [college graduates] miss the point and focus on details." Some faculty also believe that this is a foundation skill required for more sophisticated thinking. As one professor notes this is "the minimum expectation for a reader." However, an employer questions whether college graduates actually have the ability to use this skill "because of the unsaid, the main conclusion could be obscure." Other faculty believe that identifying the main conclusion is basic and as a professor notes, it is "the minimum expectation for a critical reader." A policymaker emphasizes that this skill is extremely important "so that you make the correct decision for support of nonsupport."

Some respondents stressed the necessity of determining if a conclusion is supported with reasons and identifying those reasons as stated or implied. Some faculty believe this skill is difficult for college graduates to attain while others remark that it must be done to validate a conclusion. "If one cannot identify the reasons, one cannot appraise an argument." A policymaker states, "So much in the media and in organizations is focused on selling a point of view rather than bringing together different views. Sound bites tend to be sloppily or misleadingly constructed, making this analytical skill increasingly important." Another policymaker stresses that this skill is important in order to "make sure one is not emoting thinking."

Faculty rated significantly higher than did employers the importance of the ability to determine whether a communication expresses a reason(s) in support of or in opposition to some conclusion, opinion, or point of view (see Table 38b). The faculty comment, "This is an absolute prerequisite to any reasoning," and "This is essential for argument evaluation." A faculty member questions, "Isn't this the whole point of reasoning?" while another professor stresses, "To avoid 'gut feeling' decision, one should look for substantiation. A lot of this is reading comprehension." Most employers and policymakers tended not to offer reasons for their positions.

In this entire analysis section of the survey, the respondents agreed that five skills were important for college graduates to achieve. The ability to identify the ideas presented and assess the interests, attitudes or views contained in those ideas was rated most important followed by the ability to recognize the relationship between the purpose of a communication and the problem issues that must be resolved in achieving that purpose. The importance of identifying the unstated assumptions of an argument and the background information provided to explain reasons which support a conclusion were rated extremely important. The ability to assess the constraints on the practical applications of an idea was rated slightly lower in importance than these other skills.

C.iii. Evaluation Skills

The ability to assess the credibility of a communication and the strengths of claims and arguments is critical (Chaffee, 1990; Ennis, 1987; Facione, 1990; Halpern, 1992; Paul &

Table 38b. Disagreements about Detecting and Analyzing Arguments

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Examine a communication and determine whether or not it expresses a reason(s) in support of or in opposition to some conclusion, opinion, or point of view	2.67	1.75	2.08	.0002	.0457	n.s.
Standard Deviation	1.36	1.11	1.18			
Identify the main conclusion of an argument	2.14	1.37	1.50	.0011	.0107	n.s.
Standard Deviation	1.37	.75	.74			
Determine if the conclusion is supported with reasons and identify those that are stated or implied	2.26	1.45	1.92	.0007	n.s.	.0239
Standard Deviation	1.36	.81	1.10			
Identify the background information provided to explain reasons which support a conclusion	2.71	2.24	2.58	.0426	n.s.	n.s.
Standard Deviation	1.33	1.10	1.23			
Identify the unstated assumptions of an argument	2.90	2.29	2.31	.0232	.0477	n.s.
Standard Deviation	1.51	1.31	1.05			
SKILLS — ROUND 2						
Examine a communication and determine whether or not it expresses a reason(s) in support of or in opposition to some conclusion, opinion, or point of view	2.27	1.75	1.90	.0049	n.s.	n.s.
Standard Deviation	.57	.56	.68			
Identify the main conclusion of an argument	1.85	1.46	1.57	.0014	n.s.	n.s.
Standard Deviation	1.15	.72	.70			
Determine if the conclusion is supported with reasons and identify those that are stated or implied	2.24	1.67	1.76	.0104	n.s.	n.s.
Standard Deviation	1.15	.72	.70			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

Nosich, 1991). There were a number of skills in this area where an agreement was reached. The most important skill in this section was the ability to determine if an argument rests on false, biased, or doubtful assumptions. Next the ability to evaluate the credibility, accuracy, and reliability of sources of information was cited as extremely important. Closely following was the skill of assessing the importance of an argument and determining if it merits attention. The ability to evaluate an argument in terms of its reasonability and practicality was important, followed by the assessment of statistical information used as evidence to support an argument. The remaining skills were approaching medium importance and included determining how new data might lead to the further confirmation or questioning of a conclusion; determining if conclusions based on empirical observations were derived from a sufficiently large and representative sample; and determining and evaluating the strength of an analogy used to warrant a claim or conclusion (see Table 39a).

The respondents disagreed about the importance of six different skills in this section even after the second round of surveys (see Table 39b). Faculty and policymakers rated significantly higher than employers the ability to determine if an argument makes sense. However, some respondents in all three groups stress the importance of this skill. A faculty member states, "Making sense in daily living is important," while another professor questions, "Isn't this most of the goal?" In a similar manner, an employer notes, "The ability to subject arguments to close scrutiny through the formulation of further questions is critical." This skill is the "most important overarching description of the skill. This is BASIC and ESSENTIAL," according to another employer.

Faculty rated the ability to assess bias, narrowness, and contradictions when they occur in the person's point of view as significantly more important than employers did (see Table 39b). There were very few comments written about this skill. One professor stresses that "students cannot be too strong in this area" while another instructor notes that this is "a minimum expectation of a college graduate." "How can one be a critical thinker without this ability," questions a professor. Another faculty member believes that this skill is difficult for undergraduates to achieve with little life or work experience.

The importance of assessing the clarity and consistency of language, terminology, and concepts employed in an argument was rated significantly higher in importance by faculty members than by the other two groups of participants (See Table 39b). A faculty member states, "If this is not done, it cannot be known if the argument is sound or unsound." "Clarity and consistency are necessary so that one knows exactly what one is being asked to believe or accept," emphasizes another professor. An instructor stresses that "inconsistency can be a big problem due to shifting definitions." This skill is a key to "good assessment of critical thinking," according to another professor. However, some faculty believe that this skill is lacking in our college graduates.

Some employers agree that assessing the clarity and consistency of language is very important. A manager states, "Concepts are our business as is clear communication." Another employer notes that college graduates "must be able to identify language and terminology and how it

Table 39a. Analysis of Variance — Evaluation Skills

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Assess the importance of an argument and determine if it merits attention	2.37	.62	1.86	.7165
Evaluate an argument in terms of its reasonability and practicality	2.50	1.22	1.79	.5057
Evaluate the credibility, accuracy, and reliability of sources of information	2.14	2.75	1.628	.1878
Determine if an argument rests on false, biased, or doubtful assumptions	2.04	2.02	1.57	.2794
Assess statistical information used as evidence to support an argument	2.51	1.18	2.05	.5626
Assess how well an argument anticipates possible objections and offers, when appropriate, alternative positions	2.99	.48	2.31	.8137
Determine how new data might lead to the further confirmation or questioning of a conclusion	2.63	.53	1.79	.7457
Determine and evaluate the strength of an analogy used to warrant a claim or conclusion	2.92	3.93	2.03	.1469
Determine if conclusions based on empirical observations were derived from a sufficiently large and representative sample	2.87	3.60	2.95	.2972
Determine if an argument makes sense	1.94	3.11	1.40	.1120*
Assess bias, narrowness, and contradictions when they occur in the person's point of view	2.23	6.88	1.69	.0187*
Assess the degree to which the language, terminology, and concepts employed in an argument are used in an clear, consistent manner	2.64	8.75	1.91	.0113*
Determine what stated or unstated values or standards of conduct are upheld by an argument and assess their appropriateness to the given context	2.88	6.01	2.43	.0867*

continued on next page

Table 39a. Continued

	Mean	Mean Square Model	Mean Square Error	Pr > F
Judge the consistency of supporting reasons, including their relevancy to a conclusion and their adequacy to support a conclusion	2.42	5.43	1.65	.0396*
Determine and judge the strength of an argument in which an event(s) is claimed to be the result of another event(s) (causal reasoning)	2.51	12.53	2.01	.0024*
SKILLS — ROUND 2				
Determine if an argument makes sense	1.73	3.36	.70	.0098*
Assess bias, narrowness, and contradictions when they occur in the person's point of view.	2.01	2.71	.79	.0358*
Assess the degree to which the language, terminology, and concepts employed in an argument are used in an clear, consistent manner	2.51	5.04	1.04	.0091*
Determine what stated or unstated values or standards of conduct are upheld by an argument and assess their appropriateness to the given context	2.77	3.69	1.09	.0367*
Judge the consistency of supporting reasons, including their relevancy to a conclusion and their adequacy to support a conclusion	2.36	6.37	.79	.0005*
Determine and judge the strength of an argument in which an event(s) is claimed to be the result of another event(s) (causal reasoning)	2.46	4.82	1.03	.0106*
* Significant differences noted in TUKEY and Least Square Means				

relates." Several references are made to health care and how this skill is particularly important in this context. A faculty member states this skill "is very important in health care documentation." An employer stresses, "Health care evokes a ton of emotion; therefore, language can escalate or deteriorate very easily." The comments about health care illustrate the importance of the abilities of recent college graduates to assess consistent language in a policy area that directly affects them as citizens in our society.

The determination of whether stated or unstated values or standards of conduct are upheld by an argument and their appropriateness to the given context was rated significantly higher by

Table 39b. Disagreements about Evaluation Skills

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Determine if an argument makes sense	2.26	1.81	1.97	.0458	n.s.	n.s.
Standard Deviation	1.23	1.20	1.08			
Assess bias, narrowness, and contradictions when they occur in the person's point of view	2.71	2.04	2.25	.0130	n.s.	n.s.
Standard Deviation	1.50	1.30	1.00			
Assess the degree to which the language, terminology, and concepts employed in an argument are used in an clear, consistent manner	3.02	2.38	2.97	.0117	n.s.	.0240
Standard Deviation	1.35	1.42	1.30			
Determine what stated or unstated values or standards of conduct are upheld by an argument and assess their appropriateness to the given context	3.33	2.80	2.61	n.s.	.0193	n.s.
Standard Deviation	1.63	1.67	.99			
Judge the consistency of supporting reasons, including their relevancy to a conclusion and their adequacy to support a conclusion	2.81	2.23	2.54	.0206	n.s.	n.s.
Standard Deviation	1.38	1.24	1.31			
Determine and judge the strength of argument in which an event(s) is claimed to be the result of another events(s) (causal reasoning)	3.10	2.22	2.71	.0037	n.s.	.0487
Standard Deviation	1.68	1.37	1.23			
SKILLS — ROUND 2						
Determine if an argument makes sense	2.12	1.64	1.52	.0261	.0102	n.s.
Standard Deviation	1.11	.78	.51			
Assess bias, narrowness, and contradictions when they occur in the person's point of view	2.33	1.87	2.10	.0256	n.s.	n.s.
Standard Deviation	1.02	.92	.44			

continued on next page

Table 39b. Continued

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
Assess the degree to which the language, terminology, and concepts employed in an argument are used in an clear, consistent manner	2.91	2.32	2.76	.0229	n.s.	.0187
Standard Deviation	1.33	.95	.70			
Determine what stated or unstated values or standards of conduct are upheld by an argument and assess their appropriateness to the given context	3.18	2.63	2.76	.0183	n.s.	n.s.
Standard Deviation	1.13	1.08	.70			
Judge the consistency of supporting reasons, including their relevancy to a conclusion and their adequacy to support a conclusion	2.82	2.14	2.62	.0009	n.s.	.0470
Standard Deviation	.98	.83	.97			
Determine and judge the strength of argument in which an event(s) is claimed to be the result of another events(s) (causal reasoning)	2.94	2.32	2.38	.0110	.0482	n.s.
Standard Deviation	1.22	.97	.80			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

faculty than by employers. A professor states, "Knowing the context is extremely important." "My view is that arguments inevitably engage the dimension of values," notes another instructor. A policymaker tends to agree with these statements and emphasizes, "With increasing contention and complexity in our world, values are what can bring us together and provide stability and a sense of purpose. It is important for college graduates as leaders to understand and develop their own values and use them to guide action and conduct actions that encourage them in others."

Some employers did not view values as an important element to assess in arguments. They viewed their own organizations as dealing with factual information that did not necessitate an evaluation of values. As one employer notes, "Business communications involve less arguing over values and conduct." Other employers believe this is an area of weakness for recent college graduates.

Faculty rated the ability to judge the consistency of supporting reasons, including their relevancy to a conclusion and their adequacy to support a conclusion, significantly higher than employers and policymakers did (see Table 39b). A faculty member notes, "Consistency and relevance in evidence (reasons) are important in deciding whether one ought to accept the conclusion of an argument." This skill is "essential for understanding or else cognitive dissonance occurs" stresses another instructor. Many faculty view this skill as extremely important and central to the development of good thinkers. They believe that critical thinking as an entire concept needs to be emphasized more in undergraduate education rather than simply the rote memorization of facts. Policymakers also stress the importance of this skill. They state, "This makes the difference between simple assertion and reasoned argument," "Consistency is important for a reasoned position," and "With the amount of communication that people have to deal with everyday, evaluative skills should be practiced so they're instinct can make a person lots more productive." Some policymakers assert that unless college graduates possess this skill they can not draw logical and sound conclusions without the ability to judge supporting reasons.

The importance of determining and judging the strength of an argument in which an event(s) is claimed to be the result of another event(s) was rated significantly higher in importance by faculty members and policymakers than by employers (see Table 39b). Overall, faculty believe that some familiarity with causality is essential and a fundamental skill. A professor emphasizes, "Causal connections (e.g., smoking and cancer) are among the most significant claims we have to assess, since they so often have behavioral implications." Some employers also expressed the importance of this skill. A manager states, "Business is constantly sorting out why things happened in order to control future outcomes." A lawyer stresses the need to "have strong logical reasoning skills to work in departments that have legal implications." A health care employer emphasizes this skill's importance within his own organizational context. He states that individuals must review incident reports and determine "how patients get a wrong medication. [There could be] 20 variables involved." There are some corporations where causal reasoning is very important. When problems arise, it is important for their employees to determine what creates the difficulties.

In terms of evaluation skills, the respondents agreed about the importance of nine areas. The skill rated most important was the ability to determine if an argument rests on false, unbiased, or doubtful assumptions closely followed by the evaluation of the credibility, accuracy, and reliability of sources of information. The assessment of the importance of an argument and whether it warrants attention was rated extremely important, followed by the evaluation of an argument in terms of its reasonability and practicality. The assessment of statistical information used as evidence to support an argument was rated important. The remaining skills approached medium importance. They included the ability to determine how new data might lead to the further confirmation or questioning of a conclusion; to determine and evaluate the strength of an analogy used to warrant a claim or conclusion; and to assess how well an argument anticipates possible objections and offers, when appropriate, alternative positions.

Table 40. Analysis of Variance — Inference Skills — Collecting and Questioning Evidence

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Determine what is the most significant aspect of a problem or issue that needs to be addressed, prior to collecting evidence	2.14	.90	1.48	.5437
Formulate a plan for locating information to aid in determining if a given opinion is more or less reasonable than a competing opinion	2.23	.83	1.24	.5124
Combine disparate pieces of information whose connection is not obvious, but when combined offers insight into a problem or issue	2.66	2.90	1.85	.2121
Judge what background information would be useful to have when attempting to develop a persuasive argument in support of one's opinion	2.39	3.85	1.20	.0432
Determine if one has sufficient evidence to form a conclusion	1.89	3.36	1.21	.0652
* Significance differences noted in TUKEY and Least Square Means				

C.iv. Inference Skills

The ability to reason from what we know to form new knowledge, draw conclusions, solve problems, explain, decide and/or predict is important (Facione, 1990).

C.iv.a. Inference Skills — Collecting and Questioning Evidence

A sub-skill in this area is the skill of "querying evidence." This skill involves the collection and questioning of evidence. In this subsection, respondents agreed about the importance of all five critical thinking skills contained in this segment (see Table 40). College graduates should be able to determine the most significant aspect of a problem or issue that needs to be addressed, prior to collecting evidence. The formulation of a plan for locating information to aid in determining if a given opinion is more or less reasonable than a competing opinion is extremely important. Furthermore, the ability to combine disparate pieces of information whose connection is not obvious, but, when combined, offers insights into a problem or issue

was considered important. College graduates should also be able to determine if one has sufficient evidence to form a conclusion. The judgment of what background information would be useful to have when attempting to develop a persuasive argument in support of one's opinion is essential.

C.iv.b. Inference Skills — Developing Alternatives and Hypotheses

The development of alternatives and hypotheses are considered to be important skills (Facione, 1990; Halpern, 1992). This ability includes the consideration of both pros and cons of each alternative when making decisions. In this subsection, the respondents agreed about the importance of four specific skills after the first round of surveys (see Table 41a). College graduates should be able to seek evidence to confirm or disconfirm alternatives; seek the opinion of others in identifying and considering alternatives; assess the risks and benefits of each alternative in deciding between them; and, after evaluating the alternatives generated, develop when appropriate a new alternative that combines the best qualities and avoids the disadvantages of previous alternatives. They disagreed about the importance of three skills after the first round of surveys (see Table 41b).

Faculty rated significantly higher than did employers the ability to list alternatives and consider their pros and cons, including their plausibility and practicality, when making decisions or solving problems (see Table 41b). Faculty view this as an essential skill. Some professors, however, were troubled by the term "practicality" and thought that this skill was not important in some contexts. Other faculty believed that college graduates would vary a great deal in their abilities to actually use this skill in different situations. A couple of professors viewed this skill as too advanced for community college graduates. Another instructor noted that the skill of listing alternatives and considering their pros and cons was only an intermediate step in critical thinking. He cautions that this particular skill is not the final or last step in the thinking process. Some employers were critical of college graduates' abilities to use these skills effectively. Since they did not believe college graduates possessed this skill, they gave lower ratings.

The projection of alternative hypotheses regarding an event, and the development of a variety of different plans to achieve some goal was rated as significantly more important by the faculty and policymakers than by employers (see Table 41b). Faculty note that this item places an emphasis on imagination which is critical to generate alternatives. They believe this creativity fosters flexibility and breadth in a student's thinking. This type of skill also helps to "avoid closed-mindedness" according to another professor. While assessing the alternatives is a fairly routine task, the generation of alternatives is more important and more difficult for college graduates according to some faculty. A couple of faculty believed this skill was too difficult for community college graduates. A professor concludes, "If postsecondary education does not teach this skill, what *does* it provide?" Employers tended to rate this skill lower in part because they did not agree with the idea of generating *different* plans to achieve some goal. As one employer emphasizes, "In business, alternative hypotheses need to be resolved

Table 41a. Analysis of Variance — Inference Skills — Developing Alternative Hypotheses

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Seek the opinion of others in identifying and considering alternatives	2.52	1.88	2.21	.4290
List alternatives and consider their pros and cons, including their plausibility and practicality, when making decisions or solving problems	1.97	4.58	1.23	.0262*
Project alternative hypotheses regarding an event, and develop a variety of different plans to achieve some goal	2.49	9.35	1.72	.0050*
Recognize the need to isolate and control variables in order to make strong causal claims when testing hypotheses	2.71	5.77	2.23	.0781*
Seek evidence to confirm or disconfirm alternatives	2.16	1.74	1.57	.3338
Assess the risks and benefits of each alternative in deciding between them	2.41	1.17	2.06	.5659
After evaluating the alternatives generated, develop, when appropriate, a new alternative that combines the best qualities and avoids the disadvantages of previous alternatives	2.54	1.69	1.69	.3699
SKILLS — ROUND 2				
List alternatives and consider their pros and cons, including their plausibility and practicality, when making decisions or solving problems	1.82	.60	.52	.3204
Project alternative hypotheses regarding an event, and develop a variety of different plans to achieve some goal	2.44	1.34	.78	.1856
Recognize the need to isolate and control variables in order to make strong causal claims when testing hypotheses	2.83	1.31	1.02	.2782
* Significant differences noted in TUKEY and Least Square Means				

into *one* clear direction to achieve a goal." According to some employers, it is most important to identify one plan to attain a particular goal. Although some employers disagree. A manager in health care notes, "Every patient has to have a plan of care and alternatives." For the employers, their particular responses may be more tied to their particular organizational

Table 41b. Disagreements about Developing Alternatives and Hypotheses

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
List alternatives and consider their pros and cons, including their plausibility and practicality, when making decisions or solving problems	2.36	1.81	2.03	.0118	n.s.	n.s.
Standard Deviation	1.19	1.09	1.08			
Project alternative hypotheses regarding an event, and develop a variety of different plans to achieve some goal	3.07	2.29	2.44	.0024	.0457	n.s.
Standard Deviation	1.40	1.27	1.32			
Recognize the need to isolate and control variables in order to make strong causal claims when testing hypotheses	3.14	2.53	2.75	.0362	n.s.	n.s.
Standard Deviation	1.60	1.54	1.18			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

contexts. Those companies with fairly routine procedures such as accounting firms may have less need to generate multiple paths to some goal while in service-related companies such as hospitals, there is a need to generate different plans to achieve or maintain the health of patients.

The need to isolate and control variables in order to make strong causal claims when testing hypotheses was rated significantly higher by faculty than by employers (see Table 41b). However, some faculty qualified their responses. They noted that this particular skill was more specific to certain disciplines and that not all college graduates should be expected to achieve this goal. Some faculty believed this skill was a most "fundamental characteristic of scientific knowing" and the "only way to develop a scientific base of information." A professor remarks, "All of these relate to my background as a scientist and my concern that many students, for example, have trouble understanding graphs, and as a result can be easily swayed." These faculty believed this particular skill was more relevant for graduates seeking to enter scientific or research positions. A policymaker cautions that this skill requires more maturity than an associate degree candidate would possess.

Upon the second round of surveys, participants reached an agreement about the importance of these three skills. College graduates should be able to consider pros and cons of alternatives; to project alternative hypotheses; and to isolate and control variables.

C.iv.c. Inference Skills - Drawing Conclusions

Another important component within this reasoning section is the ability of college graduates to draw conclusions (Facione, 1990). The ability to develop informed, well-reasoned conclusions which draw on the views of others but which represent an individual's own independent analysis/synthesis and conclusions is a critical skill (Chaffee, 1990). Respondents agreed that six specific skills in this area were important from the first round of surveys (see Table 42a). The highest-rated skill was the ability to seek various independent sources of evidence, rather than a single source of evidence, to provide support for a conclusion. The next important skill, rated extremely important, was to develop and use criteria for making judgments that are reliable, intellectually strong, and relevant to the situation at hand. This skill was followed by the ability to reason well with divergent points of view, especially with those with which one disagrees, in formulating an opinion on an issue or problem. Closely related was, analogies, brain storming, and trial and error. College graduates should be able to assess how the tendency to act in ways to generate results (that are consistent with one's expectations) could be responsible for experimental results and everyday observations. The application of appropriate statistical inference techniques to confirm or disconfirm a hypothesis in experiments was an important skill. After the second round of surveys, participants agreed about the importance of the remaining two skills in this section. College graduates should be able to note uniformities or regularities in a given set of facts, and construct a generalization that would apply to all of these and similar instances. They should also employ graphs, diagrams, hierarchical trees, matrices, and models as solution aids. Through two rounds of surveys, the respondents reached a consensus regarding all skills in this subsection.

C.v. Presenting Arguments Skills

Another essential area of critical thinking is in the presentation of argument skills. This involves clearly communicating and justifying the results of one's reasoning. After the first round of surveys, the respondents agreed about the importance of two skills (see Table 43a). College graduates should be able to present supporting reasons and evidence for their conclusion(s) which address the concerns of the audience. Furthermore, college graduates should be able to negotiate fairly and persuasively. Respondents disagreed about the importance of four skills. Upon the completion of the second round of surveys, the three groups agreed that three additional skills were important. The ability to present an argument succinctly in such a way as to convey the crucial point of an issue was rated extremely important as was the ability to formulate accurately and consider alternative positions and opposing points of view, noting and evaluating evidence and key assumptions on both sides. College graduates also should cite relevant evidence and experiences to support their position.

Table 42a. Analysis of Variance — Inference Skills — Drawing Conclusions

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Assess how the tendency to act in ways to generate results that are consistent with one's expectations could be responsible for experimental results and everyday observations	3.10	7.15	3.22	.1114
Reason well with divergent points of view, especially with those with which one disagrees, in formulating an opinion on an issue or problem	2.34	2.08	2.17	.3855
Develop and use criteria for making judgments that are reliable, intellectually strong, and relevant to the situation at hand	2.15	2.16	1.81	.3050
Apply appropriate statistical inference techniques to confirm or disconfirm a hypothesis in experiments	3.30	1.20	2.97	.6697
Use multiple strategies in solving problems including means-ends analysis, working backward, analogies, brain storming, and trial and error	2.66	1.15	2.77	.6595
Seek various independent sources of evidence, rather than a single source of evidence, to provide support for a conclusion	2.05	3.30	1.40	.0977
Note uniformities or regularities in a given set of facts, and construct a generalization that would apply to all these and similar instances	2.64	10.35	1.71	.0028*
Employ graphs, diagrams, hierarchical trees, matrices, and models as solution aids	3.38	8.81	3.48	.0821*
SKILLS — ROUND 2				
Note uniformities or irregularities in a given set of facts, and construct a generalization that would apply to all of these and similar instances	2.72	.40	.82	.6120
Employ graphs, diagrams, hierarchical trees, matrices, and models as solution aids	3.05	.64	1.52	.6545
* Significant differences noted in TUKEY and Least Square Means				

Table 42b. Disagreements about Drawing Conclusions

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Note uniformities or irregularities in a given set of facts, and construct a generalization that would apply to all of these and similar instances	3.21	2.40	2.72	.0035	n.s.	n.s.
Standard Deviation	1.59	1.17	1.36			
Employ graphs, diagrams, hierarchical trees, matrices, and models as solution aids	3.24	3.61	2.83	n.s.	n.s.	.0089
Standard Deviation	1.82	2.02	1.32			
EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant						

The one area where the respondents continued to disagree was the ability of college graduates to illustrate their central concepts with significant examples and show how these concepts and examples apply in real situations. Faculty rated this skill significantly higher than did employers (see Table 43b). There were few written comments to support individual positions. However, some faculty stress that this application skill requires higher level abilities from students than did some previous items in this survey.

C.vi. Reflection Skills

Reflection skills are considered to be necessary in order to monitor one's comprehension and correct one's process of thinking. Students should self-consciously monitor their own cognitive abilities, particularly by applying skills in analysis and evaluation to their inferential judgments with a goal towards questioning, confirming, validating, or correcting either one's reasoning or one's results (Facione, 1990). No consensus about the importance of these skills was reached from the first round. After the second round of surveys, respondents agreed about the importance of two skills (see Table 44a). College graduates should be able to make revisions in arguments and findings when self-examination reveals inadequacies. They should also apply the skills of their own analysis and evaluation to their arguments to confirm and/or correct their reasoning and results. Both of these skills were rated extremely important.

Two of the groups disagreed about the importance of the ability to examine critically and evaluate vested interests, beliefs, and assumptions in supporting an argument or judgment.

Table 43a. Analysis of Variance — Presenting Arguments Skills

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Present supporting reasons and evidence for their conclusion(s) which address the concerns of the audience	1.91	2.59	1.69	.2186
Negotiate fairly and persuasively	2.46	.68	2.43	.7545
Present an argument succinctly in such a way as to convey the crucial point of an issue	1.72	4.28	1.35	.0438*
Cite relevant evidence and experiences to support their position	2.04	6.78	1.30	.0063*
Formulate accurately and consider alternative positions and opposing points of view, noting and evaluating evidence and key assumptions on both sides	2.17	7.98	1.56	.0070*
Illustrate their central concepts with significant examples and show how these concepts and examples apply in real situations	2.32	4.09	1.71	.0935*
SKILLS — ROUND 2				
Present an argument succinctly in such a way as to convey the crucial point of an issue	1.66	.67	.45	.2299
Cite relevant evidence and experiences to support their position	1.75	.81	.39	.1259
Formulate accurately and consider alternative positions and opposing points of view, noting and evaluating evidence and key assumptions on both sides	1.88	.60	.61	.3713
Illustrate their central concepts with significant examples and show how these concepts and examples apply in real situations	2.04	1.34	.49	.0676*
* Significant differences noted in TUKEY and Least Square Means				

Faculty rated this skill significantly higher than did employers (see Table 44b). Many faculty stress the importance of this particular skill but note the difficulty of getting students to achieve it. A professor notes this is "very hard to do, [an] unrealistic expectation in most cases." Others question whether this can be taught or expected from the completion of an undergraduate education. "Being objective about oneself is critical for responsibility and

Table 43b. Disagreements about Presenting Arguments Skills

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Present an argument succinctly in such a way as to convey the crucial point of an issue	2.12	1.60	1.63	.0418	n.s.	n.s.
Standard Deviation	1.50	.94	1.33			
Cite relevant evidence and experiences to support their position	2.52	1.86	2.03	.0059	n.s.	n.s.
Standard Deviation	1.38	.98	1.29			
Formulate accurately and consider alternative positions and opposing points of view, noting and evaluating evidence and key assumptions on both sides	2.62	1.94	2.37	.0036	n.s.	n.s.
Standard Deviation	1.27	1.21	1.35			
Illustrate their central concepts with significant examples and show how these concepts and examples apply in real situations	2.67	2.16	2.40	.0490	n.s.	n.s.
Standard Deviation	1.44	1.28	1.22			
SKILLS — ROUND 2						
Illustrate their central concepts with significant examples and show how these concepts and examples apply in real situations	2.27	1.95	2.10	.0337	n.s.	n.s.
Standard Deviation	.76	.67	.70			
EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant						

leadership and not encouraged by the political atmosphere. Building this habit early is more feasible than hoping it will evolve with maturity." Some faculty comment on the importance of the elimination of personal biases so that individuals remain more adaptable to a variety of situations. However, employers disagree about the importance of this particular skill. When they compare it with other skills in the survey, they did not believe it was as important.

Table 44a. Analysis of Variance — Reflection Skills

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Apply the skills of own analysis and evaluation to their arguments to confirm and/or correct their reasoning and results	2.15	7.56	1.77	.0153*
Critically examine and evaluate their vested interests, beliefs, and assumptions in supporting an argument or judgment	2.09	18.65	1.66	.0001*
Make revisions in arguments and findings when self-examination reveals inadequacies	1.88	7.70	1.33	.0036*
SKILLS — ROUND 2				
Apply the skills of own analysis and evaluation to their arguments to confirm and/or correct their reasoning and results	2.05	2.55	.69	.0268
Make revisions in arguments and findings when self-examination reveals inadequacies	1.76	.05	.40	.8825
Critically examine and evaluate their vested interests, beliefs, and assumptions in supporting an argument or judgment	1.99	2.29	.91	.0844*
* Significant differences noted in TUKEY and Least Square Means				

C.vii. Dispositions

Dispositions are different from skills in that they are behavioral tendencies or traits of mind that concern how college graduates are inclined to use their thinking skills. After the first round of surveys, respondents agreed about the importance of nine tendencies (see Table 45a). The inclination rated the highest (extremely important) was to be curious and inquire about how and why things work followed by flexibility and creativity in seeking solutions. The third most important trait was to exhibit honesty in facing up to one's prejudices, biases, or tendencies to consider a problem solely from one's own viewpoint. This was followed by the willingness to persevere and persist at a complex task. The disposition of being organized, orderly, and focused in inquiry or thinking was rated extremely important and was closely followed by the inclination to arrive at a reasonable decision in situations where there is more

Table 44b. Disagreements about Reflection Skills

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Apply skills of analysis and evaluation to arguments to confirm and/or correct reasoning and results	2.67	1.96	2.11	.0098	n.s.	n.s.
Standard Deviation	1.52	1.26	1.30			
Critically examine and evaluate vested interests, beliefs, and assumptions in supporting an argument or judgment	2.88	1.78	2.14	.0001	.0235	n.s.
Standard Deviation	1.56	1.18	1.27			
Make revisions in arguments and findings when self-examination reveals inadequacies	2.31	1.65	2.11	.0094	n.s.	.0491
Standard Deviation	1.46	.99	1.24			
SKILLS — ROUND 2						
Critically examine and evaluate vested interests, beliefs, and assumptions in supporting an argument or judgment	2.30	1.87	2.00	.0383	n.s.	n.s.
Standard Deviation	1.01	.99	.63			

EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant

than one plausible solution. The behavioral tendency to find ways to collaborate with others to reach a consensus on a problem or issue was rated extremely important as was the ability to monitor one's understanding of a situation and progress towards goals. The inclination to apply insights from cultures other than one's own was rated important. The respondents disagreed about the importance of five dispositions.

However, after the second round of surveys, participants agreed that the remaining five dispositions were extremely important. College graduates should willingly self-correct and learn from errors made no matter who calls them to their attention; be fair-minded; seek truth and be impartial, even if findings may not support one's preconceived opinions; be open-minded and strive to understand and consider different points of view; value the application of reason and the use of evidence; and be intellectually careful and precise (see Table 45b).

Table 45a. Analysis of Variance — Disposition

	Mean	Mean Square Model	Mean Square Error	Pr > F
SKILLS — ROUND 1				
Be curious and inquire about how and why things work	1.65	.49	.93	.5923
Be organized, orderly, and focused in inquiry or in thinking	2.03	.42	1.35	.7303
Willingly persevere and persist at a complex task	2.02	1.59	1.33	.3044
Be flexible and creative in seeking solutions	1.75	.73	1.21	.5463
Be inclined to arrive at a reasonable decision in situations where there is more than one plausible solution	2.05	2.47	1.13	.1154
Apply insights from cultures other than their own	2.42	1.29	2.63	.6122
Exhibit honesty in facing up to their prejudices, biases, or tendency to consider a problem solely from their viewpoint	1.85	2.12	1.63	.2757
Monitor their understanding of a situation and progress toward goals	2.21	.84	1.53	.5807
Find ways to collaborate with others to reach consensus on a problem or issue	2.13	.64	2.02	.7304
Be intellectually careful and precise	1.96	4.93	1.36	.0288*
Value the application of reason and the use of evidence	1.70	8.13	1.15	.0011*
Be open-minded; strive to understand and consider divergent points of view	1.43	4.71	.78	.0028*
Be fair-minded; seek truth and be impartial, even if the findings of an inquiry may not support one's preconceived opinions	1.46	2.74	.67	.0186*
Willingly self-correct and learn from errors made no matter who calls them to their attention	1.66	2.21	.96	.1029*
SKILLS — ROUND 2				
Be intellectually careful and precise	1.85	.84	.43	.1441
Value the application of reason and the use of evidence	1.77	1.30	.49	.0724

continued on next page

Table 45a. Continued

	Mean	Mean Square Model	Mean Square Error	Pr > F
Be open-minded; strive to understand and consider divergent points of view	1.65	.25	.72	.7090
Be fair-minded; seek truth and be impartial, even if the findings of an inquiry may not support one's preconceived opinions	1.65	.58	.46	.2872
Willingly self-correct and learn from errors made no matter who calls them to their attention	1.62	.45	.56	.4460
* Significant differences noted in TUKEY and Least Square Means				

Table 45b. Disagreements about Dispositions

	Means			Significance Level		
	EMP	FAC	PM	EMP/FAC	EMP/PM	FAC/PM
SKILLS — ROUND 1						
Be intellectually careful and precise	2.38	1.81	1.94	.0237	n.s.	n.s.
Standard Deviation	1.45	1.04	1.19			
Value the application of reason and the use of evidence	2.19	1.48	1.83	.0028	n.s.	n.s.
Standard Deviation	1.38	.81	1.36			
Be open-minded; strive to understand and consider divergent points of view	1.79	1.26	1.57	.0083	n.s.	n.s.
Standard Deviation	1.18	.66	1.06			
Be fair-minded; seek truth and be impartial, even if the findings of an inquiry may not support one's preconceived opinions	1.74	1.33	1.54	.0359	n.s.	n.s.
Standard Deviation	1.17	.65	.82			
Willingly self-correct and learn from errors made no matter who calls them to their attention	1.71	1.54	1.94	n.s.	n.s.	.0268
Standard Deviation	1.22	.90	.91			
EMP = Employer; FAC = Faculty; PM = Policymaker; n.s. = not significant						

Table 46a. Critical Thinking Goals Survey — Factor Analysis — Factors 1 and 2

Goals	Factor 1	Goals	Factor 2
Recognize the use of misleading language	.78897	Assess how expectations and behaviors can influence results	.70364
Detect the use of leading questions biased for a specific response	.74989	Combine disparate pieces of information for new insights	.67512
Recognize the use of slanted definitions or comparisons	.72940	Analyze and evaluate their own arguments and reasoning	.63378
Detect the use of strong emotional language or imagery	.71477	Project alternative hypotheses and develop a variety of strategies	.59025
Detect "if, then" statements based on false assumptions	.66868	Recognize the need to isolate and control variables	.58754
Detect irrelevant topics or considerations that obscure the main issue	.58304	Judge consistency, relevance, and adequacy of supporting reasons	.53850
Assess bias, narrowness, and contradictions	.56956	Consider alternative positions and opposing points of view	.49142
Determine what values and standards are upheld in an argument	.56059	Determine and evaluate the strength of an analogy	.48374
Examine and evaluate vested interests, beliefs, and assumptions	.47944	Note uniformities and regularities and construct generalizations	.45776
Recognize confusing or ambiguous language that requires clarification	.46176	List alternatives and consider pros and cons	.41465
Identify the interests, attitudes, or views in a presented idea	.40649	Illustrate central concepts with significant examples	.41404
Identify the unstated assumptions	.40608		
Make revisions in arguments when inadequacies are revealed	.40473		
Identify the stated, implied, or undeclared purpose(s)	.40044		
Percent of variance accounted for by factor	9.12	Percent of variance accounted for by factor	6.63

C.viii. Factor Analysis

The items in the critical thinking survey were further analyzed by conducting a principle-components factors analysis with varimax rotation. This procedure was used to test the validity of the proposed structure of the underlying variables and to gain further insights into these constructs. For the critical thinking area, 12 factors were extracted since the original conceptualization consisted of 12 dimensions that were believed to account for the critical thinking variables. The rotated factor matrix is illustrated in Tables 46a-46f.

Table 46b. Critical Thinking Goals Survey — Factor Analysis — Factors 3 and 4

Goals	Factor 3	Goal	Factor 4
Seek evidence to confirm or disconfirm alternatives	.67940	Find ways to collaborate with others to reach consensus	.81314
Assess the risks and benefits of each alternative before choosing	.66776	Be flexible and creative in seeking solutions	.70372
Present supporting reasons and evidence for their conclusion(s)	.58733	Monitor understanding of a situation and progress toward goals	.69209
Cite relevant evidence and experiences to support their position	.57757	Apply insights from cultures other than their own	.61964
Negotiate fairly and persuasively	.56621	Face up to their prejudices, biases, and dogmatism	.56707
After evaluating alternatives, develop better alternatives	.53760	Arrive at a reasonable decision when there are several possibilities	.43387
Seek the opinion of others in identifying and considering alternatives	.53249	Recognize the relationship between purpose and problems and issues	.43151
Present an argument succinctly to convey the crucial point of an issue	.51953	Be curious and inquire about how and why things work	.35034
Seek various independent sources of evidence to provide support	.36930		
Percent of variance accounted for by factor	6.21	Percent of variance accounted for by factor	5.84

Many of the indirect persuasion items loaded most heavily on Factor 1. These included the abilities to recognize the use of misleading language, leading questions that are biased towards eliciting a preferred response, slanted definitions or comparisons which express bias, strong emotional language or imagery to trigger a certain response, if-then statements based upon false assumptions, and irrelevant topics or considerations that divert attention from issues. Additional items in the areas of evaluating assumptions also loaded onto this factor. These included assessing bias, narrowness, and contradictions; determining stated or unstated values; critically examining vested interests, beliefs and assumptions; and identifying the unstated assumptions. This factor accounted for approximately nine percent of the variance.

Factor 2 consisted primarily of inference items. Many of these items dealt with the review of information to project alternative hypotheses. This factor accounted for approximately seven percent of the variance.

Factor 3 was comprised of a mixture of items listed in the developing alternatives and hypotheses section and the presenting arguments segment. These items accounted for six percent of the variance.

Table 46c. Critical Thinking Goals Survey — Factor Analysis — Factors 5 and 6

Goals	Factor 5	Goals	Factor 6
Employ graphs, diagrams, hierarchical trees, matrices, and models	.77292	Make comparisons; note similarities and differences	.77637
Apply appropriate statistical inference techniques	.68996	Formulate categories, distinctions, or frameworks to organize information	.71769
Assess statistical information used as evidence in an argument	.64782	Classify and group data, findings, and opinions	.70696
Use multiple strategies in solving problems	.55195	Translate information from one medium to another	.64756
Determine if conclusion is based on an adequate and representative sample	.54094	Recognize contradictions in language, data, images, or symbols	.49486
Determine how data might confirm or challenge a conclusion(s)	.53483	Ask relevant and penetrating questions to clarify information	.42324
Assess how well an argument anticipates and responds to objections	.47815		
Determine and judge the strength of a causal reasoning argument	.40647		
Percent of variance accounted for by factor	5.74	Percent of variance accounted for by factor	5.17

Table 46d. Critical Thinking Goals Survey — Factor Analysis — Factors 7 and 8

Goals	Factor 7	Goal	Factor 8
Assess the importance and merit of an argument	.64542	Identify the main conclusion of an argument	.74633
Determine if an argument makes sense	.54391	Identify the stated or implied reasons supporting a conclusion	.68017
Assess the clarity and consistency of language and concepts	.51091	Determine if a reason supports or opposes an opinion or conclusion	.63989
Evaluate an argument in terms of reasonability and practicality	.50878	Identify background information	.50735
Determine if assumptions are false, biased, or doubtful	.48524		
Evaluate the credibility, accuracy, and reliability of the source of information	.45882		
Assess the constraints on the practical applications of an idea	.31638		
Percent of variance accounted for by factor	4.49	Percent of variance accounted for by factor	4.35

Table 46e. Critical Thinking Goals Survey — Factor Analysis — Factors 9 and 10

Goals	Factor 9	Goals	Factor 10
Be fair-minded; seek truth and be impartial	.66103	Identify the most significant aspect of a problem or issue	.66729
Be open-minded; strive to understand and consider divergent views	.66088	Judge what background information would be useful to support an idea	.66187
Willingly self-correct and learn from errors	.50088	Formulate a plan for locating information to facilitate judgments	.46153
Value the application of reason and the use of evidence	.43689	Reason well with divergent points of view	.36617
Determine if one has sufficient evidence to form a conclusion	.38854		
Develop reliable and relevant criteria for making judgments	.36375		
Percent of variance accounted for by factor	3.94	Percent of variance accounted for by factor	3.58

Table 46f. Critical Thinking Goals Survey — Factor Analysis — Factors 11 and 12

Goals	Factor 11	Goal	Factor 12
Be organized, orderly, and focused in inquiry or in thinking	.77545	Provide an example to explain something or clarify an ambiguity	.61140
Be intellectually careful and precise	.69031	Identify and seek additional resources to clarify meaning	.57574
Willingly persevere and persist at a complex task	.43593	Develop analogies and other forms of comparison to clarify meaning	.45942
Percent of variance accounted for by factor	2.96	Percent of variance accounted for by factor	2.57

Factor 4 contained mainly dispositions items including the tendencies to find ways to collaborate, to be flexible and creative in seeking solutions, to monitor understanding of a situation, to apply insights from other cultures, to exhibit honesty, to arrive at a reasonable decision, and to be curious. This factor accounted for roughly six percent of the variance.

Factor 5 comprised mainly skills related to statistical techniques, causal reasoning, and the evaluation of alternatives. For example, the ability to employ graphs and diagrams, to apply statistical

inference techniques to confirm or disconfirm hypotheses, and use multiple strategies including means-ends analysis were grouped together. This factor accounted for six percent of the variance.

Factor 6 consisted of solely interpretation skills. The abilities to make comparisons, formulate categories; classify and group data, translate information from one medium to another, ask relevant questions to clarify facts, and recognize contradictions or inconsistencies accounted for approximately five percent of the variance.

Many of the evaluation items loaded onto factor 7. These skills include the assessment of the importance of arguments and whether they warrant attention, if an argument makes sense, if an argument reflects reasonability and practicality, and an evaluation of the credibility, accuracy, and reliability of sources of information. This factor accounted for roughly four percent of the variance.

Factor 8 was composed of items from the detecting and analyzing arguments section. These inclinations included the identification of the main conclusion of an argument, the determination of whether the conclusion is supported with stated or implied reasons, examination of whether a communication expresses reasons in support of opposition, and the identification of background information provided to explain reasons in support of a conclusion. This factor accounted for four percent of the variance.

Factors 9 through 12 each accounted for less than four percent of the variance. Factor 9 consisted of mainly four disposition items. Factor 10 was comprised of inference skills related to the collection and questioning of evidence. Factor 11 consisted of items relevant to the tendencies to be precise, organized, and persistent at a complex task. Factor 12 was comprised of skills related with clarifying meaning by providing examples, developing analogies, and seeking additional resources to explain something.

This factor analysis indicates that many of the variables loaded onto a factor with other variables that they were originally grouped within the survey. However, the separate section for reflection skills was probably not necessary since most of these skills loaded onto Factor 1 along with the other interpretation skills. In some sections of the original framework, there were items that were linked together that cut across areas. For example, indirect persuasion skills also included elements originally grouped in the evaluation section. These skills are interrelated and not clear, separate units with little connections.

C.ix. Reliability

The results from the reliability analysis for the critical thinking survey are presented in Table 47. Within the interpretation section, the subsection of categorizing had the lowest reliability (a= .84) while detecting indirect persuasion had the highest reliability (a= .93). In the analysis section, the reliabilities of both the examining ideas/purpose section and the detecting/

Table 47. Reliability of Items in Critical Thinking Survey

Sections	Number of Items	Alpha
Interpretation	16	.9356
Categorizing	4	.8367
Detecting indirect persuasion	6	.9277
Clarifying meaning	6	.8707
Analysis	9	.9023
Examining ideas and purpose	4	.8620
Detecting and analyzing arguments	5	.8775
Evaluation	15	.9554
Inference	20	.9462
Collecting and questioning evidence	5	.8460
Developing Alternatives and hypotheses	7	.8871
Drawing conclusions	8	.8989
Presenting arguments	6	.9030
Reflection	3	.8946
Dispositions	14	.9173
Total critical thinking survey	83	.9844

analyzing arguments section were fairly similar (a= .86 and a= .88, respectively). In the inference section, the collecting and questioning evidence sub-unit had the lowest reliability (a= .85) while the drawing conclusions sub-unit had the highest reliability (a= .90). The presenting arguments, reflection, and disposition sections all had similar reliabilities. The evaluation section had the highest reliability (a= .95) when compared with all sections while the reflection section had the lowest reliability (a= .90). Overall, the reliability of the individual sections and subsections tended to increase with the number of items comprising a given unit. The majority of reliability coefficients were above a= .84.

C.x. Summary

Critical thinking is an educational value and is often reflected as a goal for many general education programs at colleges and universities. For example, the state universities in California require a course in critical thinking prior to graduation. Institutions with

competency-based curricular programs, such as Alverno and King's Colleges, have integrated critical thinking programs at the core of their curriculum. Critical thinking is also an important national education goal.

The purpose of the Delphi study presented in this report was to define the ideal skills that college graduates should possess to be effective citizens in society and employees in the workplace. The participants in this project reached a consensus about most elements that are considered important for good thinkers. Faculty, employers, and policymakers believe that certain interpretation skills are important. College graduates should be able to detect indirect persuasion including the use of leading questions that are biased towards eliciting a preferred response, the use of misleading language that exaggerates or downplays the importance of something, the use of slanted definitions or comparisons which express a bias for or against a position, and detect instances where irrelevant topics or considerations are brought into an argument to divert attention from the original issue.

A key component of interpretation is the ability to categorize information. There were no disagreements in this area. The respondents agreed that college graduates should be able to make comparisons, formulate frameworks or categories, classify data, and translate information from one medium to another. Faculty, employers, and policymakers note that an equally important interpretation skill is the ability to clarify meaning. In order to make clear the meaning of words, issues, conclusions or beliefs, college graduates need to recognize confusing, vague language; ask relevant or penetrating questions; identify and seek additional resources; and develop analogies or other forms of comparisons; and provide examples to explain ideas. These results are consistent with the outcomes from Facione's (1990) Delphi study.

In general, when there were disagreements between the groups about the importance of skills, faculty tended to rate them significantly higher than employers and policymakers. Most individuals considered these critical thinking skills to be important but what differed was the level of importance they gave to individual skills. For example, faculty believe that the ability to detect strong emotional language is critical. When employers and policymakers compared this skill to others on this list, they did not believe it was as important as the faculty rated it. Often the employers or policymakers did not find particular skills to be important within their own organizational contexts. Given the nature of the job responsibilities in certain companies, employers note that some skills are not nearly as important as others. In terms of detecting emotional language, the individuals with disagreements tend to stress that their organizations deal with objective, factual information where this type of language is not encountered in their view. However, policymakers did rate significantly higher than did both faculty and employers the importance of detecting "if, then" statements.

The ability to identify the explicit and implicit features of a communication, especially in arguments that put forth conclusions are essential skills according to the respondents. This supports the findings from Facione's (1990) study. Students should be able to examine ideas and purposes by assessing the constraints on the practical applications and by assessing the

interests, attitudes, or views contained in those ideas. The ability to identify stated, implied or undeclared purpose(s) of a communication was rated significantly higher by the policymakers. Some faculty noted the difficulties of teaching students this particular skill, and this perception could account for their lower ratings. However, faculty valued the ability to identify the main conclusion of an argument and to determine if a conclusion is supported with stated or implied reasons more than the employers or policymakers did. Furthermore, faculty rated higher than did these two groups the ability to determine whether a communication expresses a reason(s) in support of or in opposition to some conclusion or point of view.

College graduates should be able to assess the credibility of a communication and evaluate the strengths of claims and arguments. In this area, there was a high degree of consensus among the participants. These results are consistent with the assertions made by a number of scholars (Chaffee, 1990; Ennis, 1987; Facione, 1990; Halpern, 1992; and Paul & Nosich, 1991). Specifically, students need to: determine if arguments rest on false, biased, or doubtful assumptions; evaluate the credibility, accuracy, and reliability of sources of information; assess the importance of an argument and determine if it merits attention; evaluate an argument in terms of reasonability and practicality; assess statistical information; determine how new data may lead to further confirmation or questioning of a conclusion; determine if conclusions are derived from sufficiently large and representative samples; and evaluate analogies.

Faculty rated the ability to assess bias, narrowness, and contradictions as significantly more important than did employers. A similar pattern emerged in the areas of assessing the clarity and consistency of knowledge and determining whether stated or unstated values or standards of conduct are upheld by an argument. Faculty tended to view these skills as essential to the development of good critical thinkers. However, some employers did not believe that college graduates possess these skills. When they perceived college graduates as lacking certain skills, they tended to give them lower ratings. Some faculty also noted the difficulties of teaching students these particular skills.

There were two additional areas where faculty rated skills higher than did both employers and policymakers. These areas included causal reasoning abilities and the judgment of consistency of supporting reasons. In all three groups, there were individuals who rated these skills as extremely important. However, due to the nature of certain companies, some employers and policymakers viewed these skills as less important.

Faculty, employers, and policymakers agreed about the importance of all inference skills identified in the survey (see Table 48). The ability to collect and question evidence was an inference skill rated important by most participants. This skill involves the formulation of a plan for locating information, the combination of disparate pieces of information, determination of sufficient evidence to form a conclusion, and the judgment of what background information would be useful. Equally important was the ability to develop alternatives and hypotheses. Respondents agreed that college graduates should be able to seek evidence to confirm or disconfirm alternatives; seek opinions of others; assess the risks and benefits of each option; and develop new alternatives when appropriate. The importance of

Table 48. Summary of Consensus and Disagreements in Each Section of Critical Thinking Survey

Section of Survey	Round 1 — Number of Items				Round 2 — Number of Items				Final — Number of Items			
	A	%	D	%	A	%	D	%	A	%	D	%
Interpretation Skills	8	50.0	8	50.0	5	62.5	3	37.5	13	81.3	3	18.7
Categorizing	4	100.0	0	00.0	—	—	4	100.0	0	00.0		
Detecting Indirect Persuasion	0	00.0	6	100.0	4	66.7	2	33.3	4	66.7	2	33.3
Clarifying Meaning	4	66.7	2	33.3	1	50.0	1	50.0	5	83.3	1	16.7
Analysis Skills	2	22.2	7	77.3	3	42.9	4	57.1	5	55.6	4	44.4
Examining Ideas and Purpose	2	50.0	2	50.0	1	50.0	1	50.0	3	75.0	1	25.0
Detecting and Analyzing Arguments	0	00.0	5	100.0	2	40.0	3	60.0	2	40.0	3	60.0
Evaluation Skills	9	60.0	6	40.0	0	00.0	6	100.0	9	60.0	6	40.0
Inference Skills	15	75.0	5	25.0	5	100.0	0	00.0	20	100.0	0	00.0
Collecting and Questioning Evidence	5	100.0	0	00.0	—	—	5	100.0	0	00.0		
Developing Alternatives and Hypotheses	4	57.1	3	42.9	3	100.0	0	00.0	7	100.0	0	00.0
Drawing Conclusions	6	75.0	2	25.0	2	100.0	0	00.0	8	100.0	0	00.0
Presenting Argument Skills	2	33.3	4	66.7	3	75.00	1	25.0	5	83.3	1	16.7
Reflection Skills	0	00.0	3	100.0	2	66.7	1	33.3	2	66.7	1	33.3
Dispositions	9	64.3	5	35.7	5	100.0	0	00.0	14	100.0	0	00.0
TOTAL	45	54.2	38	45.8	23	60.5	15	39.5	68	81.9	15	18.1

A = Number of Items for which there was agreement; D = Number of Items for which there was disagreement

considering the pros and cons of alternatives when making decisions is consistent with the work done by Facione (1990) and Halpern (1992). The participants also agreed that the ability to draw conclusions was important. College graduates should be able to develop informed, well-reasoned conclusions which draw on the views of others but which represent an individual's own independent analysis/synthesis and their own summaries. Faculty, employers,

and policymakers faculty agreed that every item related to inference was important for college graduates to achieve.

Another important skill is the ability to present arguments. This skill involves clearly communicating and justifying the results of one's reasoning. According to the respondents, college graduates should be able to present supporting reasons and evidence for their conclusions, present the crucial point of an issue, evaluate the key assumptions, and formulate accurately alternative positions. The illustration of central concepts with significant examples and how they apply to real situations was considered to be extremely important by the faculty members. However, some faculty and employers questioned whether college graduates should actually be expected to achieve this goal. They noted that this skill requires advanced abilities that some college graduates do not possess.

Reflection skills are considered to be necessary in order to monitor one's comprehension and correct one's process of thinking. College graduates should be able to make revisions in their arguments when their own self-examination reveals inadequacies. They should also apply the skills of their own analysis to their own arguments to confirm and/or correct their reasoning and results. However, faculty rated the ability to critically evaluate interests, assumptions, and beliefs in supporting an argument significantly higher than did employers. Faculty believed these are essential skills while some employers viewed these as less important within their own organizations.

Dispositions are behavioral tendencies or traits of mind that concern how college graduates are inclined to use their thinking skills. They agreed about the importance of all dispositions included in this survey. College students should be curious, organized, fair-minded, open-minded, flexible, creative, and should persevere, apply insights from other cultures, find ways to collaborate, value the application of reason, and willingly self-correct and learn from errors.

The participants in this study reached a consensus about many important critical thinking skills that college graduates should achieve upon the completion of their degree programs. These results reflect the perspectives of this group of participants. We make no assertion that the critical thinking skills agreed upon in this study are important for every college and university graduate. The participants outlined the specific ideals they considered to be crucial for college graduates to possess for citizenship and employment. These results provide information that others can consider and critique, and can use to determine applications within their own settings. These ideals may serve as considerations for further dialogue and for a future goal of guiding assessment and curricular reforms.

V. CONCLUSION: IMPLICATIONS FOR TEACHING AND LEARNING

This study has focused upon the ideal skills that faculty, employers, and policymakers believe that college graduates should achieve. There is a clear consensus regarding the importance of certain basic as well as advanced skills. However, we do not know how well our college graduates are attaining advanced abilities within the areas of communication and critical thinking skills. Many focus group and advisory board members for this project stressed the need to link the results from this project with methods to improve instructional strategies and assessments of student learning within the classroom. These individuals believed that this work should be expanded and built upon in order to have an impact and bring about constructive improvements in higher education. In this section, we outline the implications of the findings, challenges, and future actions that may be developed to strengthen the undergraduate curriculum and enhance student learning.

A. Linking Results with Instructional Activities in the Classroom

A challenge facing higher education is how to increase the awareness and consciousness of faculty teaching in the classroom so that the development of students' communication and critical thinking skills are raised to a higher level. The traditional model of teaching in the classroom often consists of the professor lecturing while students take notes, read textbooks, and memorize material. Students in this classroom are then frequently assessed by examinations where they are asked to recall basic facts, terms or concepts. In this environment, students are passive learners. Faculty do the thinking for students and transmit information.

A major factor that affects instructors' abilities to develop students' advanced skills is an overemphasis with having "students memorize the accepted answers and not be concerned enough with guiding them in the processes and methods of arriving at well founded answers" (Glaser, 1985, p. 25). Another reason for the lack of attention to promoting advanced skills is that many professors do not know how to teach these skills because "they have never been provided with pedagogical methods for doing so" (King, 1994). Faculty members tend to teach in the same way that they were taught in their own undergraduate and graduate education. Despite these challenges, some educators have created materials and procedures or processes to guide students in the development of advanced skills in communication and critical thinking (for example, Angelo & Cross, 1993; Halpern, 1994; White, 1994). These skills can be developed by instruction designed specifically to enhance students' abilities (Facione, 1992; Halpern, 1992, 1994; and Paul, 1992). The empirical literature also confirms that cognitive development is associated with specific kinds of classroom activities and instructor behaviors (Ewell, 1994).

Students must become more engaged with their own learning in order to help them develop their advanced skills. Faculty play a key role in guiding students to reach these higher levels of learning. Professors can use instructional techniques that stimulate students to pose questions and think of their own answers. The effective use of questions can help students to construct

knowledge (King, 1994). There are a variety of instructional strategies under the heading of "active learning" that show promise for moving students to higher levels of learning. These strategies move students away from simply rewriting what they have learned from lectures or restating others' ideas. The purpose of active learning is to guide students to explore their own thinking about concepts or issues in order to expand their own mental processes and structures (Meyers & Jones, 1993).

One major aspect associated with active learning is that students are given many opportunities to write, speak, and think critically across the curriculum rather than relying on the development of these skills solely in a single course. Faculty design class activities that give students the chance to practice these skills. For example, students should be given opportunities to write multiple drafts when the assignment is initially given and encouraged to make revisions until the assignment is turned in at the end of the term (White, 1994). Students can be encouraged to discover their own topics for development rather than being given a specific idea by the professor. Peer interaction in teams and other collaborative efforts are additional important aspects of active learning. There is a growing body of information about active learning strategies that may help students to improve their skills.

B. Using the Goals Inventories

One potential way to use the results from this project and the actual goals inventories is to begin or facilitate discussions on campuses with groups of faculty about what their course goals, objectives, and outcomes are relative to communication skills and critical thinking. The inventories developed for this project can serve as the broad array of considerations for goals in individual courses. In groups, faculty can rate the importance of these goals for the courses that they teach. If groups of faculty teach the same course at a particular college, they may wish to reach a consensus about the importance of certain skills. Faculty discussions about goals and outcomes relative to communication and critical thinking skills can help them to make informed judgements about what should be included in courses and how to structure classes so that students reach higher levels of learning. Once goals and outcomes are clearly articulated, then all faculty can work together to build these skills not only in general education courses but also in the more advanced courses that are required for the academic majors. In a similar manner, internship supervisors at the institution and within business organizations could evaluate how important these goals are for effective performance within their company and assess how well students are meeting these particular goals. This collaboration could help employers identify individuals who would be matched to achieve the demands of particular positions.

Many experts and educators believe that advanced skills such as critical thinking consist of general principles of reasoning that bridge subjects and have application to many subjects (Ennis, 1987; Facione, 1990). Halpern (1993) asserts that courses specifically designed to develop generic reasoning skills use diverse examples to provide the best practice with transferring these skills. Assessments of student learning should be based upon simulated

cases that are similar to contexts that students are exposed to outside of the classroom. Effective assessments of communication and critical thinking in the classroom or at the program level would help faculty to determine if students are improving their abilities if there are weaknesses. In the areas of gains in student learning, faculty would be able to determine what particular instructional strategies or course activities are linked with student growth. The goal of assessment should be to identify which specific educational experiences or which practices result in gains in communication and critical thinking skills.

In order to determine how well college graduates are achieving these goals nationally, Ewell (1994) has outlined a vision statement for the usefulness of "instructional good practice indicators in undergraduate education." He concludes that the evidence from an extensive literature review reveals that there are much stronger connections between desired outcomes and what happens in classes and what students actually do than can be gained from a particular institution's curricular structure. This statement supports the calls for action by the focus groups and advisory boards of this project. Ewell suggests that the best method to determine indicators of good practice is to survey national samples of faculty and administrators with questionnaires to gain information about faculty-student contact and specific student behaviors related to actual time on certain tasks as well as their quality of effort. While these activities may present some useful beginning information, they are primarily highlighting faculty and student perceptions rather than their actual behaviors.

Faculty often state that they are seeking to develop students' abilities to analyze, synthesize, and think critically. However, research indicates that faculty do not follow their good intentions when they develop their courses. A formal review and analysis of course syllabi and exams revealed that college faculty do not in reality focus on these advanced skills and instead are far more concerned with students' abilities to acquire knowledge, comprehend basic concepts or ideas and terms, and apply this basic knowledge (Ratcliff, 1994; Ratcliff, Jones, Guthrie, & Oehler, 1991). While gathering data on actual behaviors is more difficult, it is necessary since perceptions do not match actions.

A formal and systematic review of cross-sectional samples of collegiate assignments and examinations by the faculty members who teach courses could provide useful information. Expectations and levels of advanced achievements could be more clearly defined. In order to determine if college students have become better critical thinkers or communicators, an evaluation would need to be tied to the goals that were specifically targeted in the courses. Innovative, model course activities and assessment techniques that faculty have designed to develop students' communication and critical thinking skills could be identified and serve as examples that other faculty who strive to improve their own courses could consider.

The purpose of this study was not to provide a single definition of important communication and critical thinking skills rather this work is intended to stimulate discussion from these extensive lists of goals so that faculty may adapt, modify, or decide which goals may be most appropriate for their own college students. A strength of modern colleges and universities is that they provide a universe of knowledge and curriculum that is the mirror of a

technologically, socially, and economically complex society. Such curricular complexity has been a necessity given the diversity of students who enroll in postsecondary programs with different goals, interests, and expectations. A postsecondary assessment must reflect and describe the diversity of that curriculum if it is to enhance our students' abilities.

The project outlined in this report begins a formal investigation into the skills that faculty, employers, and policymakers believe are critical for college graduates to attain. The findings are based upon the perspectives of the participants in this study. While these individuals do not constitute a representative sample, they do move us towards a better understanding of what skills are considered important and define these skills in greater specificity.

This study has focused on primarily learning within the formal environment of courses and academic programs. However, there is a great deal of literature that documents the contributions of experiences outside of the classroom that may influence the development of communication and critical thinking skills (Pascarella and Terenzini, 1991). The development of these skills does not end with a college degree. Once students are hired into their professional jobs, they become members of a new culture. Individual companies have different cultures which influence what is and is not acceptable in communications with other employees. For example, individual companies develop their own formats for written documents and these formats vary considerably from one company to another. The effective writing abilities of college graduates are in part influenced by their ability to learn the local norms and standards of good practice which govern the conventions of quality written documents within a particular organizational culture. Employees often receive additional training once they enter the workplace.

Ideally an effective undergraduate education helps students become better thinkers, communicators, and decision makers in the real world contexts of work and society that extend beyond the traditional classroom. Halpern (1993, p. 242) asserts that "ideally, the students who have become better thinkers will demonstrate critical thinking skills that range from more reasoned consumerism to improved problem solving."

Students need to acquire basic communication skills and develop cognitive abilities to understand principles, concepts or ideas. However, students must move beyond being simply receivers or transmitters of information. In order to reach advanced skills in writing and speech as well as listening, college students need to develop their critical thinking skills in order to evaluate, analyze, and make judgements about the multitude of messages or interactions they encounter in their daily lives. Ideally, college graduates will learn to assume responsibility for their own intellectual development that will continue beyond the formal education they receive in college. The improvement of these skills should help students to become better citizens and employees in real world contexts.

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